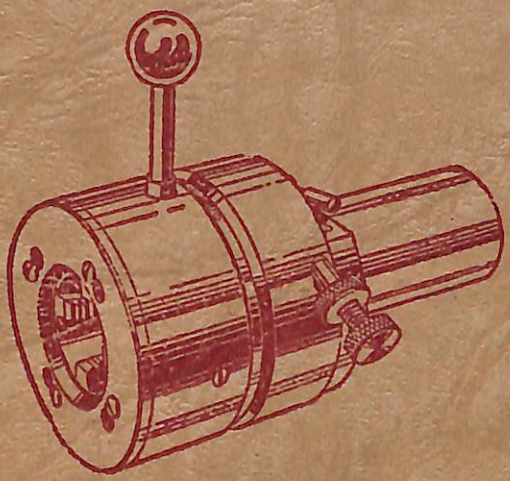
HERBERT

THE BOOK OF THE

COVENTRY DIEHEAD

(SEVENTEENTH EDITION)



ALFRED HERBERT LTD
COVENTRY

621.9
HER

County Council of the County of Lanark
EDUCATION COMMITTEE

The Technical College
Coatbridge

REFERENCE LIBRARY

Author HERBERT, A. LTD.

Title COVENTRY DIEHEAD

Class No. 621.9

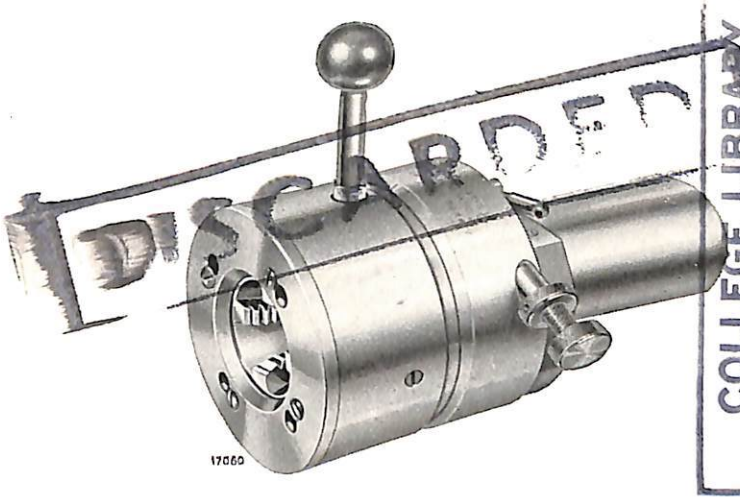
No book may be removed from the library

COATBRIDGE TECHNICAL COLLEGE

9547
£10

THE COVENTRY DIEHEAD

(SEVENTEENTH EDITION)



DISCARDED

COLLEGE LIBRARY
BOOK No. 4421
CLASS 621.9
COPY
EDITION 17th.

ALFRED HERBERT LTD.

Head Works : EDGWICK, COVENTRY
Telegrams: LATHE TELEX Telephone: 88781 (12 Lines)

Factored Division : RED LANE, COVENTRY
Telegrams: LATHE TELEX Telephone: 89221 (10 Lines)

BRANCHES

LONDON, S.W.1	70 Vauxhall Bridge Road	Victoria 8334/5/6/7
GLASGOW, S.W.2	Montrose Avenue, Hillington	Halfway 1606/7
MANCHESTER, 1	2 Whitworth Street West, Knott Mill	Central 7108/9
BIRMINGHAM, 4	208 Corporation Street	Central 8511
SHEFFIELD, 1	Ellin Street	Central 20136/7
NEWCASTLE, 1	Carliol Square	25619
BRISTOL, 1	94 Redcliffe Street	24908

INDEX

Page

A

Acme Thread Dies 9
Adjustability 2
Aircraft Steels, Dies for 5
Angle, Throat 3, 11, 45
Attachment to withdraw detent pin 14
Automatic Machines, Dieheads on 21

B

Baseplate for grinding Dies .. 43
Bored-out Dieheads .. 57, 60
Buttress Thread Dies 10

C

Cam Elevating Holder 17
Capacities of Coventry Dieheads 15, 57
Capstan Lathes, Dieheads on 16, 61
Care of Diehead 33
Centre Lathes, Dieheads on .. 18
Changing the Dies 34
Chart for use of Grinding Fixture 47
Close-to-shoulder Threading .. 11
Closing the Diehead 33
Coach Screw Threads 8
Combination Turret Lathes, Dieheads on 17, 62
Comparison Thread Tables 79-83
Cutting Action of Dies 42
Cutting Taper Threads 38
Cutting the Thread 37

D

DIES—
- Accuracy of 4
- Acme Thread 9
- Aircraft Steel 5
- Buttress Threads 10
- Changing 34
- Coach Screw Thread .. 8
- Cutting action of 42
- Grinding.. 41
- Ground Thread 4
- Height Gauge, for 44
- Knuckle Thread 7
- Left-Hand 2, 34, 43
- Long Throat 14
- Milled Thread 4
- Multi-start Thread 8
- Ordering 6
- Porcelain Mould Thread .. 8
- Projecting 14
- Setting to diameter 35

Page

DIES (*continued*)
- Short Taper Thread .. 38
- Short Throat 11
- Special Thread 7
- Square Thread 9
- Straight cut 3
- Taper Thread 38
- Two diameter 10
- Zonic 4

Depth of Thread Table 12
Detent Pin Withdrawing Attachment 14
Dieheads, Styles of 1
Dimensions of C.H. Dieheads .. 58
Dimensions of Rotating Dieheads 59
Direction of Work Rotation .. 35
Dismantling and Re-assembling 33
Drilling Machines, Diehead on .. 30

E

Elevating Holder 17

F

Fine Thread Dieheads 1, 57
Finishing Cuts 36
Fixtures for Grinding 43

G

Gauge, Height 44
Grinding the Dies 41
Grinding Fixtures 43
Grinding Fixture Baseplates .. 43

H

Height Gauges 44
Hexagon Turret Lathes, Dieheads on 17, 61
Holder, Cam Elevating 17
Holder, Hand Operated 17
Holder, Spring 21

I

Instructions for Dismantling Dieheads 53
Instructions for Grinding the dies 41
Instructions for Operating Dieheads 33
Internal Stop for opening Diehead 40

K

Knuckle Thread Dies 7

Alfred Herbert Ltd Coventry England

DISCARDED

INDEX

Page

L

Leading Features 2
Left-Hand Threads .. 2, 34, 43
Long Throat Dies 14
Lubrication of Work 35

M

Materials Screwed 4
MOUNTING Coventry Dieheads on :—
- Automatic Screw Machines 21
- Capstan Lathes .. 16, 61
- Centre Lathes 18
- Combination Turret Lathes 17, 62
- Drilling Machines 30
- Hexagon Turret Lathes 17, 61
- Multi-Spindle Automatics 27, 62

Multi-start Thread Dies 8

O

Opening the Diehead 33, 40
Operating Instructions 33
Ordering Coventry Dies 6
Oversize Threads 1

P

Parts Illustrations 64-69
Porcelain Moulds, Taper Threads for 8
Projecting Dies 14

R

Recess, Width of 11, 13
Replace Parts 56, 63-75
Rotating Dieheads 1, 24
Rotating Taper Threading Diehead 29
Roughing and Finishing Cuts .. 36

S

Screws and Springs, Table of .. 63
Selection of Diehead 15
Short Threads 14
Sizes of Dieheads 1
Solid Adjustable Dieheads .. 76
Spare Parts 63-75
Special Thread Dies 7
Speed of Work 35

Page

Spring Holders for Dieheads, list of 75
Square Thread Dies 9
Standard Thread Depths Table 12
Styles of Dieheads 1

T

TABLES :—
- Capstan Lathes, Fitting Dieheads to 16, 61
- Combination Turret Lathes, Fitting Dieheads to 17, 62
- Dimension of Coventry Type C.H. Dieheads 58
- Dimensions of Coventry Rotating Dieheads .. 59
- Hexagon Turret Lathes, Fitting Dieheads to 17, 61
- Multi-Spindle Automatics, Fitting Dieheads to 27, 62
- Screws and springs for dieheads 63
- Screw Thread, comparison 79-83
- Spring Holders 75
- Standard Thread Depths .. 12
- Thread Forms 79
- Use of Fixtures and Baseplates 47

Taper Thread Cutting 38
Taper Threading with Rotating Diehead 29
Threading close to shoulder .. 11
Thread Cutting 37
Thread Depths, Table of .. 12
Thread forms, Table of 79
Throat Angle 3, 11, 45
Troubles and Remedies 50
Two Diameter Dies 10
Types of Dies 4

W

Work Rotation, Direction of .. 35
Work Speed 35

Z

Zonic Lapped Dies 4

INTRODUCTION

The Coventry Self-opening Diehead provides the best means of cutting threads accurately and quickly. The diehead is simple to use and easy to set ; the dies can be quickly inserted, withdrawn for sharpening and replaced. By using the die grinding fixture all four dies of a set are sharpened at the same time to the correct cutting angle.

By following the instructions given in this book everyone can learn, in a short time, how to use the diehead and how to sharpen the dies.

When threads are to be cut the following must have consideration.

1. What size of diehead should be used? See page 15.
2. What type of dies should be used? See pages 3 to 6.
3. Are threads to be cut close to a shoulder? See page 11.
4. What cutting speed should be used? See page 35.
5. What cutting lubricant should be used? See page 35.

As it is impossible in an instruction book to deal with all the queries that may arise in thread cutting we shall be glad to help in obtaining satisfactory results ; our specialists attend user's works, free of charge, for this purpose.

We guarantee that all the threading equipment which we supply will cut accurate threads in all materials that can be threaded ; we shall welcome opportunities of proving this in user's works.

THE COVENTRY SELF-OPENING DIEHEAD

Coventry Dieheads are opened by arresting the travel of the head ; this allows the front part to draw forward and release the dies.

The following sizes are made :—

Style CH, hardened and ground, $\frac{1}{4}''$, $\frac{5}{16}''$, $\frac{1}{2}''$, $\frac{3}{4}''$, $1''$, $1\frac{1}{4}''$, $1\frac{1}{2}''$ and $2''$.

Style C, hardened only where necessary, $3''$ and $4\frac{1}{2}''$.

Style C. Fine Thread Dieheads. Hardened only where necessary. For cutting threads of vee form, 11 per inch and finer of restricted length, $2\frac{1}{2}''$ and $3\frac{1}{2}''$. Any length may be screwed when dieheads are fitted with special flanged adaptor.

Oversize Threads. A standard Coventry Diehead will cut short threads of fine pitch a little larger than its nominal capacity. For example a $\frac{1}{2}''$ Coventry Diehead will cut a $\frac{5}{8}''$ B.S.F. thread of a length equal to the width of the threaded portion of the dies.

The $\frac{5}{16}''$ and larger sizes of Style CH. Dieheads and the $3''$ and $4\frac{1}{2}''$ Style C. Dieheads can be bored out to cut fine pitch threads of limited length which are larger than the nominal capacity of the dieheads. See pages 57 and 60.

Rotating Dieheads. When a diehead is fitted to a revolving spindle, a closing sleeve is necessary ; all sizes of Coventry Dieheads except the $4\frac{1}{2}''$ size can be so arranged. As the attachments vary for different machines we quote on receipt of full particulars. Rotating dieheads can also be arranged to cut taper threads.

Taper Threading. Taper threads, both right and left-hand, can be cut with taper dies used in a standard diehead, where the length of the taper does not exceed the width of a new die, minus the throat. Longer tapers require a Taper Threading Diehead. (See pages 6 and 38).

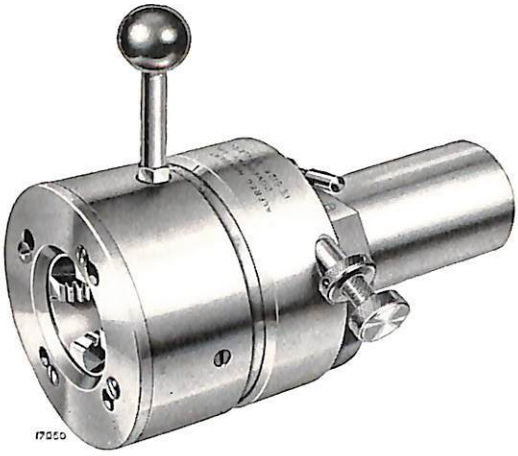


Fig. 1—The Coventry Self-opening Diehead, style CH.

LEADING FEATURES.

Compactness, permitting the dieheads to be used on capstan slides, in which the height of the tool holes above the slide is limited.

Interchangeability. Replace parts can be promptly supplied (see pages 63 to 75 inclusive).

Roughing and Finishing Device, for obtaining extra high finish. (See page 36).

Accurate Pitch, maintained by the guiding action of the leading or non-cutting portion of the die.

Adjustability, providing fine regulation of diameter.

For accurate work it is necessary, owing to the variation of helix angle with diameter, to use a separate set of dies for each diameter.

For certain work, the adjustability of Coventry Dieheads, together with the straight cut system of producing Coventry Dies, allows a small variation in diameter to be cut with one set of dies.

Clean and Smooth Threads are produced because the dies have cutting angles suited to the material being screwed.

Parallel Threads, owing to the very efficient support for the dies in the diehead.

Ease of Grinding Dies. The dies can all be ground together to definite angles, uniform for all sizes of dies and dieheads.

Diehead Cuts Right and Left-Hand threads equally well when both right and left-hand dies are supplied.

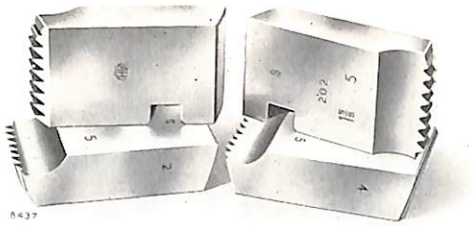


Fig. 2—A set of standard B.S.W. Dies.

COVENTRY STRAIGHT CUT DIES.

All genuine Coventry Dies are stamped with the registered trade mark AH

The design of the dies is such that cutting takes place only on the throat and the first full tooth (Fig. 2) the remaining threads being above centre height and thus acting as a nut, ensuring accurate pitch. The recommended angles, when regrinding, must always be maintained by using the correct grinding fixtures.

Four standard throat angles of 15°, 20°, 33° and 45° have been adopted for various applications indicated on page 47.

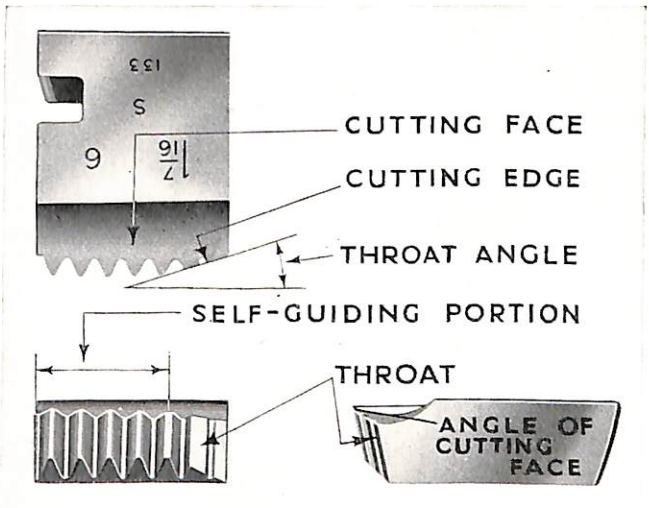


Fig. 3—Accurate threads are assured by the combined cutting and self-guiding action of the dies.

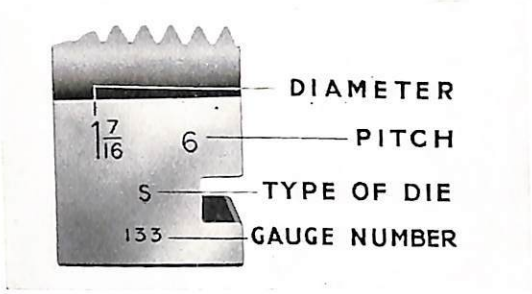


Fig. 4—Markings on Coventry Dies.

The front face of each die is stamped as shown in Fig. 3. Dies which are not of standard Whitworth form have also the form of thread stamped on them as—USS, SI, etc.

Non-standard, or special dies are also stamped on the back with an SD number which should always be quoted when ordering replace dies.

To suit various materials, Coventry Dies are made in the following types for all dieheads :—

For Screwing	
Cast Iron	M
Phosphor Bronze	M
Manganese Bronze	M
Gunmetal	M
High Tensile Steel	AM5°
Stainless Steels	AM5° or AS
Mild Steel	S
Wrought Iron	S
Malleable Cast Iron	S

For Screwing	
Copper	4AS
Aluminium	4AS Lapped
Aircraft Wires	AM5°
Most Acme threads in Steel	M5°
Nickel Steels	AM5°
Brass	B
Vulcanite	B
Erinoid	B

The type letter for dies for Fine Thread Dieheads is the same as that for dies for Standard Dieheads but is prefixed by the letter F.

Coventry Dies are supplied in the following grades :—

Milled or ground thread dies for good quality threading.

Patent Zonic Lapped dies for precision threading.

Holozone dies for cutting coarse pitch deep threads.

COVENTRY DIES FOR AIRCRAFT STEELS.

The peculiar machining properties of the new aircraft steels combined with the high finish demanded by Aircraft Inspection Department has been met by the development of a modified type of "Coventry" die designated by prefixing "A" to the standard marking, *viz.*, "AS", "AM", and "AM5°". These give longer life and better finish than the standard dies on such steels as S1, S2, S11, S65, S69, S80, etc.

The following table gives some materials and the appropriate type of Die for use in stationary dieheads only.

All dies with the exception of type 1M5° can be supplied standard or zonic. 1M5° dies are supplied zonic only.

Material.	Type of Die.
S.1	4AS
S.2	AM (Roughing) AM5° (Finishing)*
S.6	4AS
S.11	AM (Roughing) AM5° (Finishing)*
S.14	4AS
S.15	IM5°
S.21	AS
S.28	IM5°
S.61	AS
S.62	4AS
S.65	AM (Roughing) AM5° (Finishing)*
S.69	IM5° or AM5°
S.70	AM
S.76	AM
S.79	AM (Roughing) AM5° (Finishing)*
S.80	AS or AM5°
S.80.B	A.M. (Roughing) AM5° (Finishing)*
S.81	AM5°
S.82	AM
S.90	AM
D.T.D.77	IM5°
D.T.D.102	AS5°
D.T.D.130	4AS
D.T.D.160	AM
D.T.D.164	AM5°
D.T.D.176	AM5°
D.T.D.188	AM5°
D.T.D.331	IAM
D.T.D.367	AM
D.T.D.428	S
D.T.D.473	AM
S.A.E.3140	AM
Siemens	AM .5 Carbon
Silver Steel	IS
Silicon Aluminium (*see below*)	
Super Hyman	M5°
Super Inca	AM
E.N.12	AM5°
E.N.16	AM. ZONIC
E.N.58	AM.
T.45	4AS ZONIC
K.9	AM ZONIC (Roughing) AS (Finishing)
K.E.40A	AS ZONIC
K.E.805	AM
K.E.965	AM
Maxise	AM5°
Magnesium	4AS
Magnesium Alloy	4AS
Marathon Steel	AM (Roughing) AM5° (Finishing)*
Molybdenum Manganese	AM
Monel Metal	AM5°
B.S.S.32/4	AS
B.S.S.251	AM5°
B.S.S.5005/103	AM5°
B.S.S.5005/201	4AS
B.S.S.5005/203	AM5°
B.S.S.5005/204	AS
B.S.S.5005/302	AM5°
B.S.S.5005/401	IM5°
B.S.S.5005/402	IM5°
B.S.S.5005/501	AS
B.S.S.5005/601	IM5°
B.S.S.5006/105	4AS
B.S.S.5006/205	M5°
B.S.S.5006/302	AM5°
B.S.S.5009/211	S
B.13 Brass	AM
B.A.C.17	AM5° 40ft. per minute min.
Cu. Ni. TFK. 9	4AS
Dural	4AS
Hadfields E.R.A.	IM5°
Phos. Bronze	AM5°
Vibrac	AM
Fox's 54	AM5°
6.W.8	AM5°
A.A. Steel	AM5°

*If only one Diehead is used :—Use type AM5° dies.

Silicon Alum. Cutting conditions of aluminium containing high percentage of silicon vary with composition. Samples should be submitted for test to decide best type of dies.

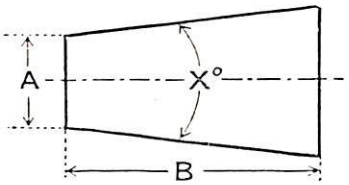


Fig. 5—Particulars of taper required when ordering dies for taper threads.

ORDERING COVENTRY DIES

When ordering Coventry Dies it is necessary to give the following information :—

1.—Size and style of diehead.

2.—Form of thread (see pages 3 to 5 and 79 to 83).

3.—Diameter and pitch to be cut.

4.—Width of recess, if any, at end of thread.

5.—Material to be screwed. As there are now many grades of steel in use, full particulars should be given. After a satisfactory type of die has been found it is sufficient to re-order by the mark letter (see Fig. 4).

6.—If required to cut close to a shoulder, short throat dies or projecting dies should be specified, see pages 11 to 14.

On certain dies differing from standard an S.D. number is stamped on the back of the die. When re-ordering it is only necessary to quote this number.

7.—When dies for taper threads are required it is necessary to supply the following additional particulars of work (see Fig. 5).

The diameter (A) of the small end of the taper.

The length (B) of the taper.

The angle (X°) of the taper.

It should also be very clearly stated whether the dies are to be used in a standard diehead, or in a taper threading diehead.

Unless otherwise stated B.S.P. dies are supplied to cut the thread at right angles to the sides of the taper.

Briggs taper pipe dies produce a thread at right angles to the axis of the thread.

SPECIAL THREAD DIES.

We recommend that standard thread forms be used wherever possible, thus obviating the manufacture of special equipment and gauges and to avoid making other than recognised standards.

When supplying dies for these non-standard threads, an additional charge is made to cover part cost of any special tools, which, however, remain our property.

Special thread forms are sometimes unavoidable and Coventry Dies have been made and used very successfully for many of these, some of which are illustrated on the following pages.

Coventry Dies are also successfully used for threading many materials other than steels and bronzes.

We are always ready to experiment on customers' material so as to determine the most efficient form of dies to use, and place our services at the disposal of all who have threading problems to solve.

Our specialist attends customers' works to give advice on all matters connected with Coventry Dieheads and Dies.

Fig. 6—Shallow thread of modified Acme form.

Special Threads with Standard Dies.—Can often be cut by grinding away the crest of the thread on the dies. This brass screw for opening and closing a window has a thread of shallow modified Acme form.

Fig. 7—Modified Knuckle Thread.

Modified Knuckle Threads.—As there are no recognised standards for Knuckle Threads, full particulars of the thread required must be stated. The line drawing shows a thread form which is used extensively for railway couplings. We have hobs for making dies for cutting several forms of round threads.

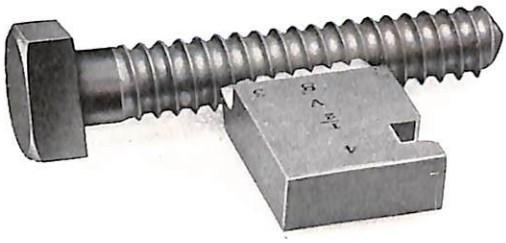


Fig. 8—Coach Screw Thread.

Coach Screw Threads.—This thread is very efficient for screwing into wood when the hole is drilled to suit the core diameter of the screw.

Fig. 9—Taper Thread for Porcelain Moulds.

Taper Threads for Porcelain Moulds.—Threads of this form are produced very satisfactorily by Coventry Dieheads when arranged for taper threading, as illustrated on page 38.

Fig. 10—Three-start Whitworth Form Thread.

Multi-Start Threads.—The illustration shows a Three-start Whitworth Form Thread cut in brass.

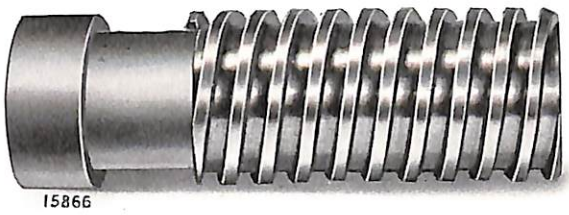


Fig. 11—Acme Form Thread.

Standard Acme Threads can be cut, but on account of the coarse pitches the dieheads cannot be used up to full capacity. We, therefore, prefer to recommend a suitable size of diehead on receipt of particulars of the work to be threaded.

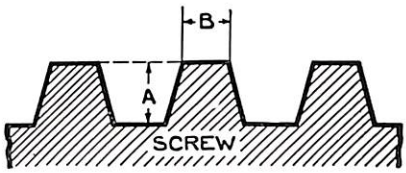


Fig. 12—Dimensions required of Acme threads for brass valve and cock work.

On brass valve and cock work, however, shallow threads are required of the Acme 29° angle, and we are able to supply dies for this class of work. The dimensions indicated in Fig. 12 should be stated when ordering, in addition to the particulars on page 6, as many hobs for these threads are in existence.

We recommend that wherever possible dimension "A" on Acme threads should be half or two-thirds standard depth. These shallow threads are just as efficient, easier to screw and tap and provide a stronger core diameter for both screw and taps.

Square Threads. Square threads are not a practical manufacturing proposition in a diehead; the nearest to the square thread which we recommend is the 10° included angle.

The square thread is a difficult thread to produce by any method and square thread taps are easily broken owing to interference on the flank of the thread causing jamming.

This obsolete type of thread should never be used on new designs.

Fig. 13—Buttress Thread.

Buttress Threads. There are no recognised standards for buttress threads, therefore full particulars of diameter, pitch, angle, etc., should be sent with enquiry. Four threads per inch is the coarsest pitch which can be cut. The vertical face of thread must have a minimum angle of 95° with axis of screw. Position of the angular side of the thread relative to the end of the screw should be stated.

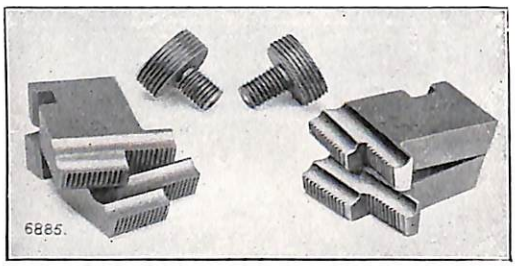


Fig. 14—Dies for threading two-diameter screws in continuous pitch.

Two Diameter Screws. The threads have to be continuous so that both diameters screw simultaneously into position.

Pitch error from one thread to another is within .0005″.

THE TECHNICAL COLLEGE, COVENTRY

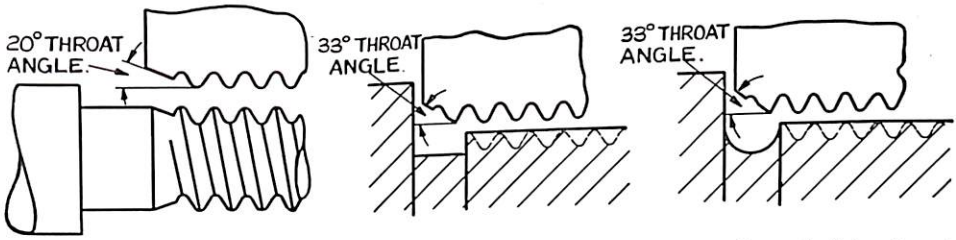


Fig. 15—Ample clearance should be allowed where possible between the end of the thread and the shoulder. For close-to-shoulder threading a recess should be provided.

THREADING CLOSE TO A SHOULDER.

Threading close to a shoulder should be avoided whenever possible ; the thread should finish far enough from the shoulder to allow dies with the standard 20° throat angle to be used with ample clearance between the shoulder and the front of the diehead when it opens at the end of the thread.

If the thread must be cut as close to the shoulder as possible it is necessary to provide a recess in front of the shoulder as shown in Fig. 15. The minimum width of this recess is obtained by the following formula :—

Cotangent of throat angle × (depth of thread + .010″) + clearance.

Clearance = .010 for a depth of thread not exceeding .030″.

,, = .015 ,, ,, ,, between .030 and .080″.

,, = .020 ,, ,, ,, greater than .080″

To save calculation, the table of thread depths (page 12) used in conjunction with the graphs (page 13) will enable any width of recess to be obtained for all threads in general use, using dies with 15°, 20°, 33° or 45° throat angle.

The graphs apply to the length of throat on a new die. When regrinding, the length of throat increases. The original length must therefore be maintained by grinding back the dies as shown in Fig. 63, page 49.

To thread as closely as possible to a shoulder it is necessary to use dies with 33° or 45° throat angle. Such dies wear rapidly on steel as the pressure on the cutting edge is much heavier than it is when the standard throat angle of 20° is used. It is therefore advisable to take a second cut.

STANDARD THREAD DEPTHS IN INCHES

Formulæ for Depth	Pitch × .64033	Pitch × .6495	Pitch × .8660	(Pitch ÷ 2) + .010″	Pitch × .5327	Pitch × .7036		Pitch × .600	
						Systeme Internationale		B.A.	
Number of Thds. per In.	* Whit.	U.S.S.	Sharp Vee	Acme	C.E.I.	Pitch in m/m.	Depth in ins.	No.	Depth in ins.
3	.2134	.2165	.2887	.1767		7	.1939		
3½	.1830	.1856	.2474	.1529		6.5	.1800		
4	.1601	.1624	.2165	.1350	.1332	6.0	.1662		
4½	.1423	.1443	.1925	.1211	.1184	5.5	.1523		
5	.1281	.1299	.1732	.1100	.1065	5.0	.1385		
5½	.1164	.1181	.1575	.1009	.0969	4.5	.1246		
6	.1067	.1083	.1443	.0933	.0888	4.0	.1108		
7	.0915	.0928	.1237	.0814	.0761	3.5	.0969		
8	.0800	.0812	.1083	.0725	.0666	3.0	.0831		
9	.0712	.0722	.0962	.0655	.0592	2.5	.0692		
10	.0640	.0650	.0866	.0600	.0533	2.1	.0582		
11	.0582	.0591	.0787	.0505	.0484	2.0	.0554		
12	.0534	.0541	.0722	.0467	.0444	1.8	.0499		
13	.0493	.0500	.0666		.0410	1.75	.0484		
14	.0457	.0464	.0619	.0407	.0381	1.7	.0471		
15	.0427	.0433	.0577		.0355	1.66	.0460		
16	.0400	.0406	.0541	.0362	.0333	1.5	.0415		
17	.0377	.0382	.0509		.0313	1.25	.0346		
18	.0356	.0361	.0481		.0296	1.0	.0277	0	.0236
19	.0338	.0343	.0457		.0280	.90	.0249	1	.0212
20	.0320	.0325	.0433		.0266	.85	.0235		
21	.0305	.0309	.0412		.0254	.81	.0224	2	.0191
22	.0291	.0295	.0394		.0242	.80	.0222		
24	.0267	.0271	.0361		.0222	.75	.0208		
25	.0256	.0260	.0346		.0213	.73	.0202	3	.0172
26	.0246	.0250	.0333		.0205	.70	.0194		
27	.0237	.0241	.0321		.0197	.66	.0183	4	.0156
28	.0229	.0232	.0309		.0190	.60	.0166		
30	.0213	.0217	.0289		.0178	.59	.0163	5	.0139
32	.0200	.0203	.0271		.0166	.55	.0152		
34	.0188	.0191	.0255		.0157	.53	.0146	6	.0125
35	.0183	.0186	.0247		.0152	.50	.0139		
36	.0178	.0180	.0241		.0148	.48	.0133	7	.0113
37	.0173	.0176	.0234		.0144	.45	.0125		
38	.0169	.0171	.0228		.0140	.43	.0119	8	.0101
40	.0160	.0162	.0216		.0133	.39	.0108	9	.0092
42	.0152	.0155	.0206		.0127	.35	.0096	10	.0083
48	.0133	.0135	.0180		.0111	.25	.0069		
50	.0128	.0130	.0173		.0107				
56	.0114	.0116	.0155		.0095				
60	.0107	.0108	.0144		.0089				

* Also B.S.F., B.S.P., Std. Brass, Adm. Fine, Conduit and Copper Tube.

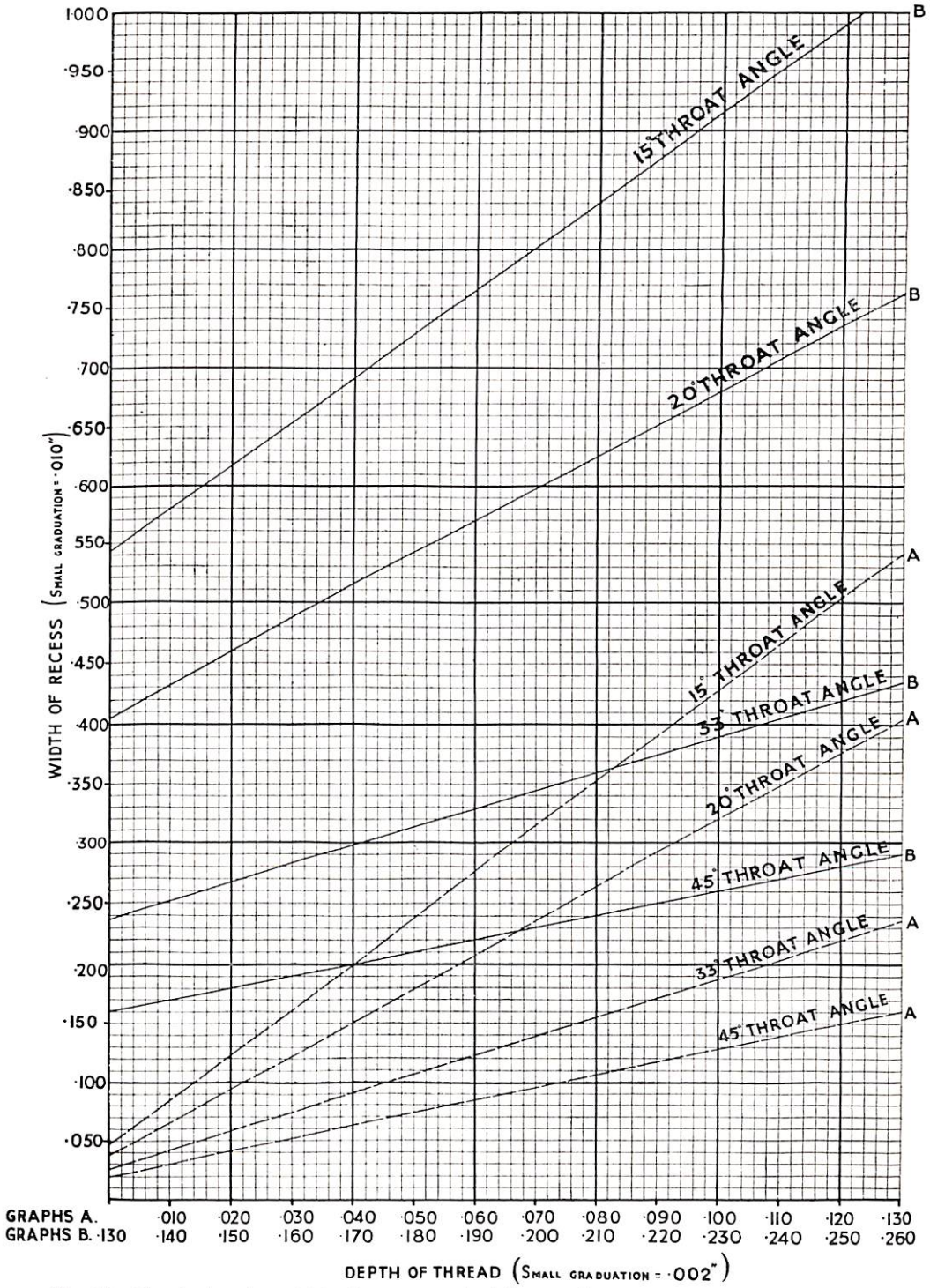


Fig. 16—Graph showing width of recess required for any throat angle and depth of thread.

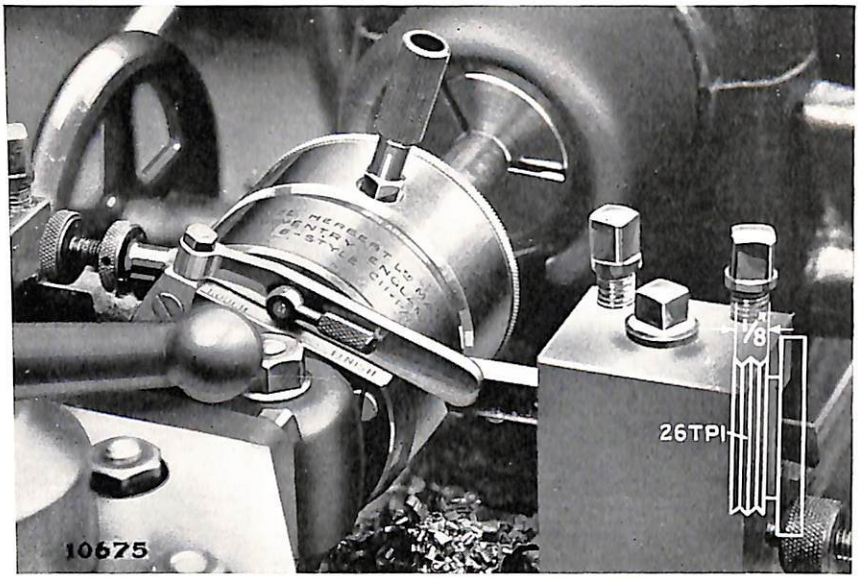


Fig. 17—Detent pin withdrawing attachment for very short threads.

Short Threads. To prevent damage to very short threads when the front of the diehead is being pulled forward to open the dies, a Detent Pin Withdrawing Attachment (Fig. 17) can be supplied.

A hinged lever at the back of the diehead engages the detent pin handle.

The lever comes into contact with a conveniently placed stop and the opening mechanism actually begins to operate before the dies begin to cut. Threads as short as $\frac{1}{8}$" long can be dealt with successfully.

Projecting Dies. If a shoulder or projection on the work or chuck jaws interferes with the front plate of the diehead it is necessary to use projecting dies and a slotted front plate. These projecting dies and slotted front plates are made specially so cannot be delivered promptly ; the dies require steel of a larger section than standard dies and are more expensive ; they should be used only when absolutely necessary.

Long Throat Dies. When screwing very tough material or very coarse threads, a long throat angle of 15° should be used, as this distributes the cutting over more threads and prolongs the life of the dies.

Provision is made in the standard grinding fixture for this 15° throat angle to be ground. See page 47.

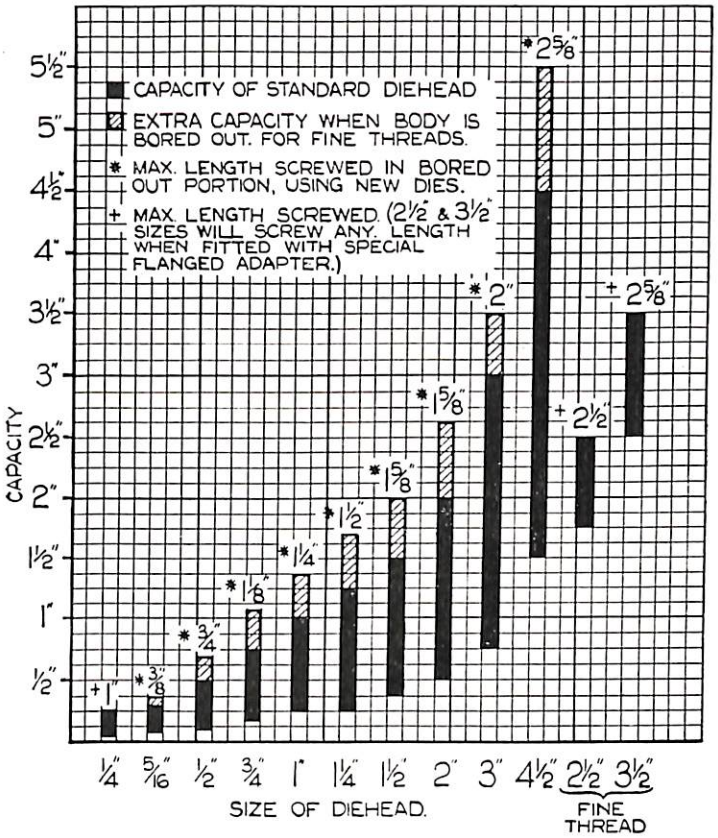

CAPACITY OF STANDARD DIEHEAD
EXTRA CAPACITY WHEN BODY IS BORED OUT. FOR FINE THREADS.
* MAX. LENGTH SCREWED IN BORED OUT PORTION, USING NEW DIES.
+ MAX. LENGTH SCREWED. (2½" & 3½" SIZES WILL SCREW ANY. LENGTH WHEN FITTED WITH SPECIAL FLANGED ADAPTER.)
CAPACITY
5½" 5" 4½" 4" 3½" 3" 2½" 2" 1½" 1" ½"
+1" *⅜" *¾" *1⅛" *1¼" *1½" *1⅝" *1⅝" *2" *2⅝" +2½" +2⅝"
¼" 5/16" ½" ¾" 1" 1¼" 1½" 2" 3" 4½" 2½" 3½"
SIZE OF DIEHEAD.
FINE THREAD

Fig. 18—Chart showing relative capacity of Coventry Dieheads and additional capacities when bored out for fine threads.

SELECTION OF DIEHEAD.

It is not good practice to use a diehead continuously at its maximum capacity owing to the strain and wear on the working parts; on the other hand it is not economical to thread small diameters with a large diehead owing to the cost of the dies.

A $\frac{1}{2}$" Whitworth thread could be cut with a $\frac{1}{2}$", $\frac{3}{4}$", 1", $1\frac{1}{2}$", or 2" diehead.

If the majority of screws to be cut are $\frac{1}{2}$" diameter it is preferable to buy a $\frac{3}{4}$" diehead which allows a little extra capacity for larger threads and permits the economical purchase of dies for any smaller threads which have to be cut.

Consideration must also be given to the capacity of the machine on which the diehead is to be used. If large diameter

threads are to be cut on a capstan lathe it often occurs that the diehead available will not swing over the back of the capstan slide. This can be overcome by using an elevating holder which raises the diehead clear of the slide when the capstan rotates (See Figs. 20 and 21).

Owing to its construction a standard Coventry Diehead will cut short threads of fine pitch a little larger than its nominal capacity. For example, a $\frac{1}{2}$" diehead will cut a $\frac{5}{8}$" B.S.F. thread of a length equal to the width of the threaded portion of the dies.

The $\frac{1}{2}$" Coventry Diehead and larger sizes can be bored out to cut fine pitch threads of limited length which are larger than the nominal capacity of the standard diehead (See pages 57 & 60).

MOUNTING COVENTRY DIEHEADS

The Coventry Diehead has long been a standard component of the tooling equipment of Capstan and Turret Lathes, Single and Multiple Spindle Automatic Machines.

The illustrations on the following pages show several different methods of mounting Coventry Dieheads on these machines.

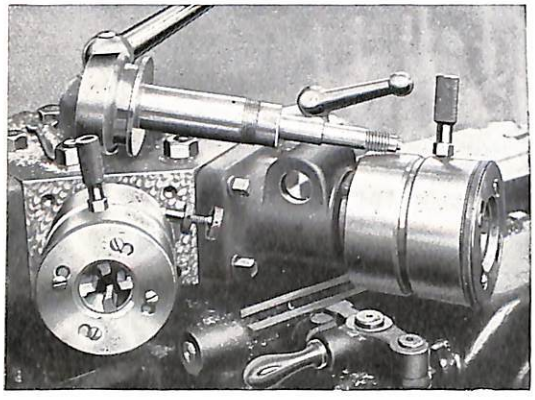


Fig. 19—$\frac{3}{4}$" and 1" Coventry Dieheads on No. 4 Capstan Lathe.

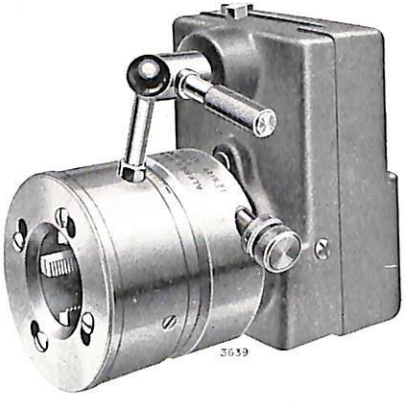


Fig. 20—Hand-operated elevating holder.

Capstan Lathes. Coventry Dieheads are usually mounted directly in the turret holes of Capstan Lathes, or, if the shank is larger than the turret hole, in a holder bolted to the turret face. (See Fig. 19). If a holder is not convenient, the diehead can be supplied with a special shank smaller than standard.

It should be realised that the fitting of a special shank smaller than standard restricts the capacity of the diehead as the maximum size screw cannot be passed through the smaller shank.

The elevating holder shown in Fig. 20 can be used where the swing over capstan slide prevents the use of a large diehead. (See table on page 61).

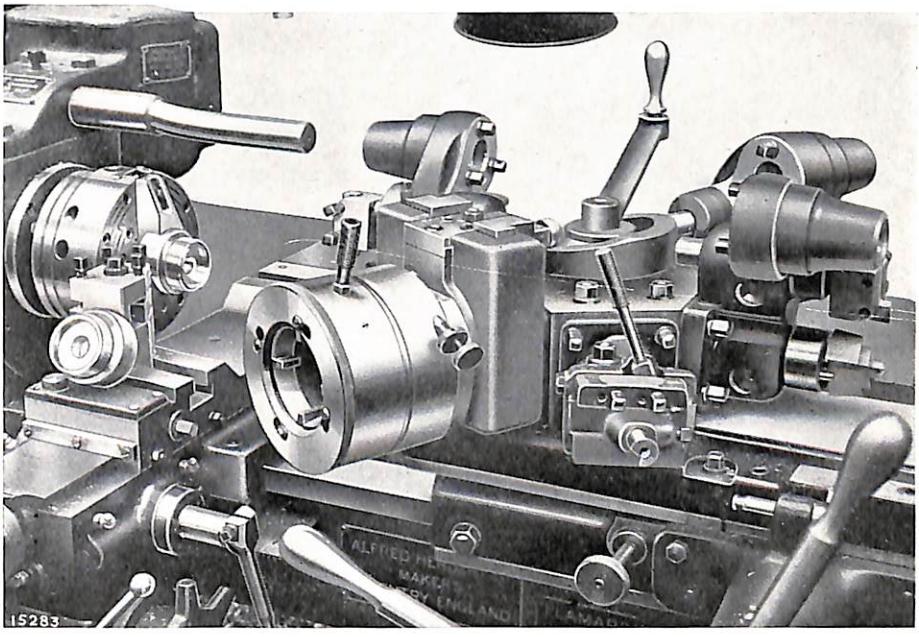


Fig. 21—Automatic cam-operated elevating holder.

The patent automatic cam-operated elevating holder is used where the production time of the job is low. The diehead is automatically elevated when passing over the capstan slide and returned to working position during the rotation of the turret.

Combination Turret Lathes. The diehead is usually held in a boring bar holder to carry it over the cross-slide. When the length of the work permits, the diehead may be held in the turret hole or in a bush. See table on page 62.

Hexagon Turret Lathes. The table on page 61 shows the sizes of dieheads that can be used on Turret Lathes for bar work, and whether they require a bush or holder to mount them on the turret.

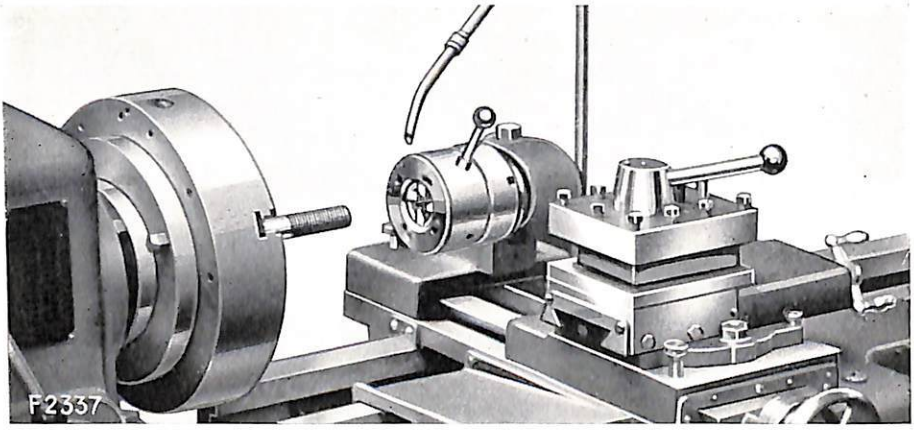


Fig. 22—Coventry Diehead mounted in a hinged bracket on an engine lathe.

Centre Lathes. The usual method of fitting a diehead with a taper shank and mounting in the tailstock spindle is not satisfactory owing to the difficulty of arresting the travel of the diehead to open it at the end of the thread.

A better method is to mount the bracket on the saddle vees as Fig. 23. The saddle provides the necessary traversing arrangement of the diehead to follow the thread being cut.

To open the diehead a simple form of dead stop can be provided by inserting a piece of steel of suitable length between the headstock and the saddle, this arrests the travel of the

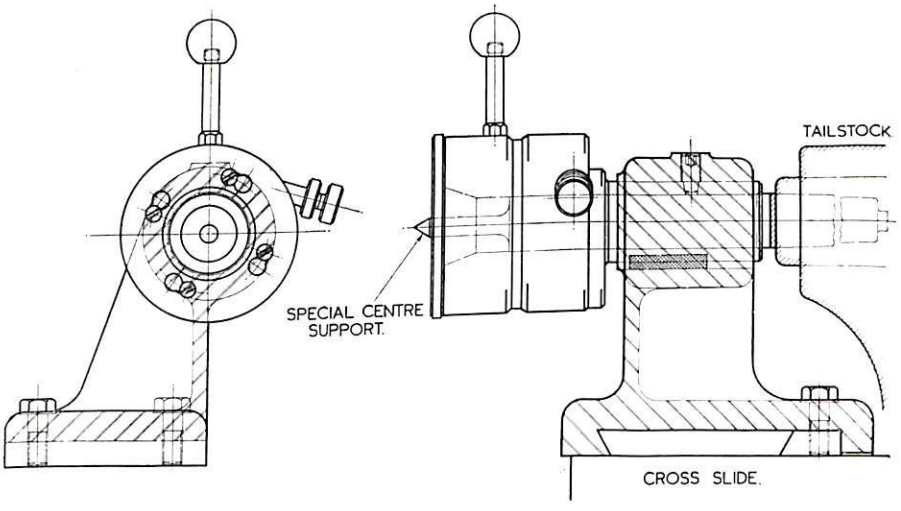


Fig. 23. Coventry Diehead mounted on lathe saddle with special tailstock centre.

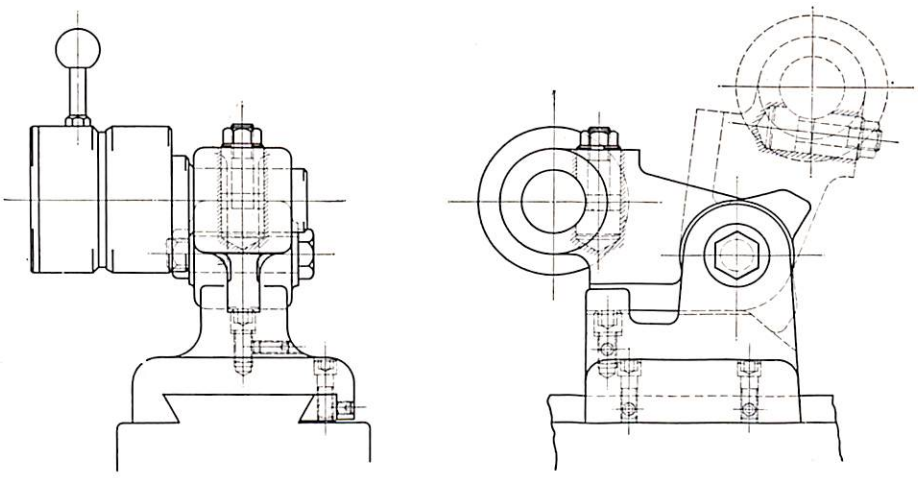


Fig. 24—Details of hinged bracket.

saddle allowing the front of the diehead to pull off the Detent or locking pin and open in the usual manner. The above form of stop is not suitable if the lead screw is used for controlling the diehead.

Medium length screws are cut by holding one end in the lathe chuck on the headstock centre, the opposite end being supported on the long centre shown, which is a sliding fit in the shank of the diehead.

The bracket should be finish bored in position to obtain correct alignment.

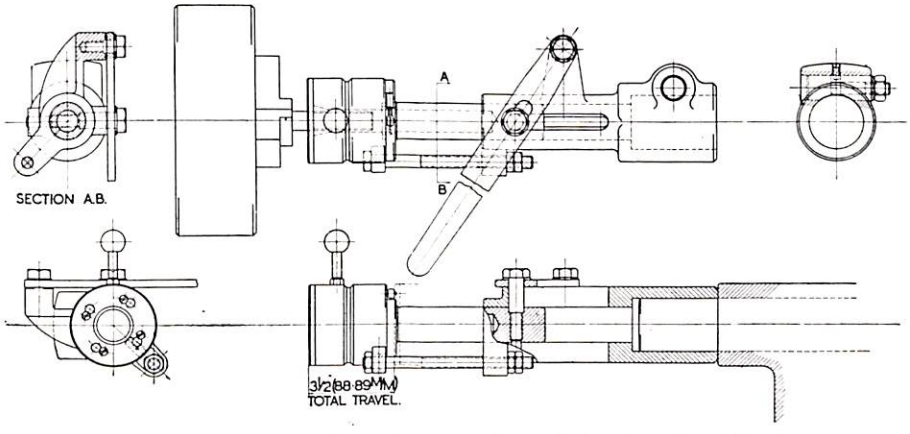


Fig. 25—Details of sleeve for mounting a diehead on the tailstock.

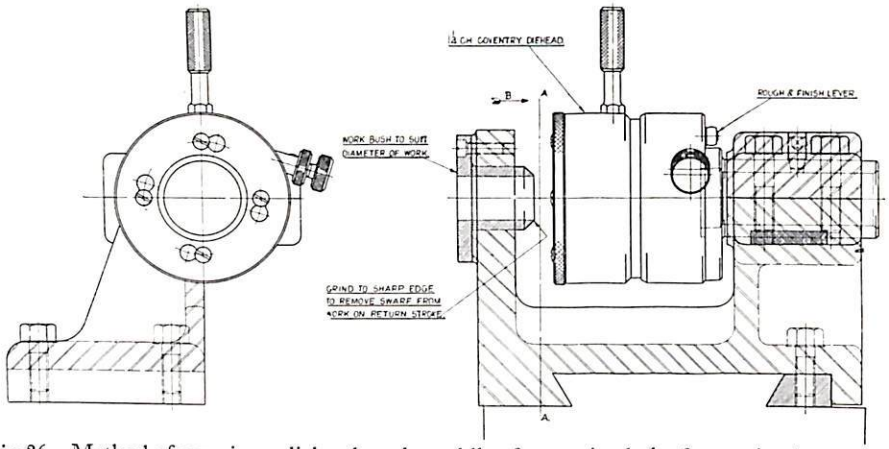

CH. COVENTRY DIEHEAD
ROUGH & FINISH LEVER
WORK BUSH TO SUIT DIAMETER OF WORK
GRIND TO SHARP EDGE TO REMOVE SWARF FROM WORK ON RETURN STROKE
B
A
A

Fig.26—Method of carrying a diehead on the saddle of an engine lathe for cutting long screws

If turning or parting off operations are necessary in addition to screwing, a hinged or fold-over type of bracket is necessary (See Fig. 24) this allows the diehead to be swung out of the way of the tool post, and also allows drilling or reaming operations from the tailstock.

This arrangement on a centre lathe having a hollow spindle fitted with a universal jaw chuck is a good substitute for a capstan or turret lathe where small quantities have to be machined.

Another arrangement which provides for the traverse and stopping of the diehead is shown in Fig. 25.

The main casting is bored to suit the tailstock barrel and is clamped in position by a pad bolt or similar method. A long special shank free to slide longitudinally in the bore of the casting carries the diehead. The traversing handle is connected to the shank by the hexagon head pin shown which also acts as a key to prevent rotation of the diehead. The screwed rod and locknuts provide the stop for arresting the travel of the diehead thus allowing the front of the diehead to pull off and open in the usual manner. This arrangement leaves the saddle free for turning and cutting off arrangements.

THE TECHNICAL COLLEGE, COATBRIDGE

Fig. 26 shows a diehead and bracket arranged for cutting long screws, the bush shown supports the long screw in front of the diehead. One end of the screw is held in the lathe chuck, the rear end supported on a long centre passing through the diehead as shown in Fig. 23, the diehead being controlled by the lead screw of the lathe.

Dies used in a Diehead controlled by a lead screw should have the $2\frac{1}{2}°$ top face angle removed, that is, the cutting face should be parallel with the back of the die to eliminate the self-guiding action of the die.

When cutting threads with a diehead the bulk of the metal must be removed in the first cut therefore four threads per inch is the coarsest we recommend. If a coarser thread is required, this can often be obtained by means of comparatively fine pitches and multiple start of thread. For some threads shallow forms (half or two thirds depth) are being increasingly used. These are easier to screw and also to tap ; the large core diameter on both screw and tap results in less tap breakage.

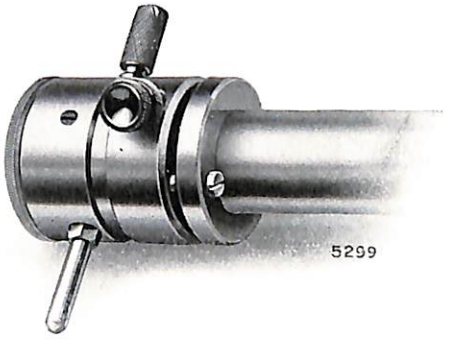


Fig. 27—Spring Holder for use on Single Spindle Automatics.

Automatic Screw Machines. On Single Spindle Automatic Screw Machines it is desirable that the diehead should be fitted with a spring holder. Where possible, the turret on the tool slide carrying the diehead should be actuated by a cam to give a feed slightly less than the pitch of the screw being cut.

On page 75 is a list of the sizes of dieheads and diameters of shanks of spring holders which are generally kept in stock as they are frequently required for standard automatic machines. The $\frac{1}{4}''$ Coventry Diehead has been specially designed for very high speed automatics and, therefore, a spring holder has been incorporated in the design.

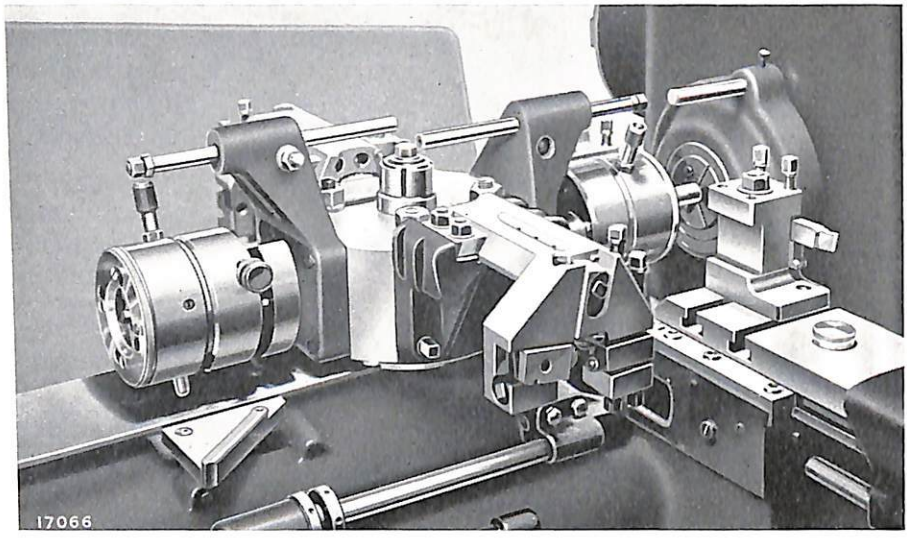


Fig. 28—Arrangement of stops and trip plate for operating Coventry Diehead on Herbert 1¼″ Bar Autos.

Herbert Auto. Screw Machines. On the Herbert 1¼″ Bar Auto the diehead is carried in a spring holder and is opened by arresting the motion of the turret slide by adjustable stop rods as shown in Fig. 28.

The diehead is closed by a trip plate on the turret slide which actuates the closing lever as the turret revolves.

The auto closing lever is supplied only with non-rotating dieheads for automatic screw machines and must be specially ordered.

Cleveland Automatic Machines. On Model A Machines (Fig. 29) Coventry Dieheads can be fitted direct in the turret hole without spring holder, as the variable feed motion can be set to follow the pitch very closely, but the use of a spring holder is advisable to ensure a good start and especially when screwing coarse threads.

The diehead is opened in the usual way and closed again, as the turret revolves, by a bracket attached to the turret cap.

On Model B Machines Coventry Dieheads can be fitted in the slide in the usual manner, Fig. 30. As this slide has no rotating motion it is necessary to close the diehead by external means. The usual way is to attach a suitable lever to the threaded stock stop rod. Then as this rod revolves to bring the stock stop into position, the lever will catch the closing handle on the diehead, thus rotating the front portion of it sufficiently to close it.

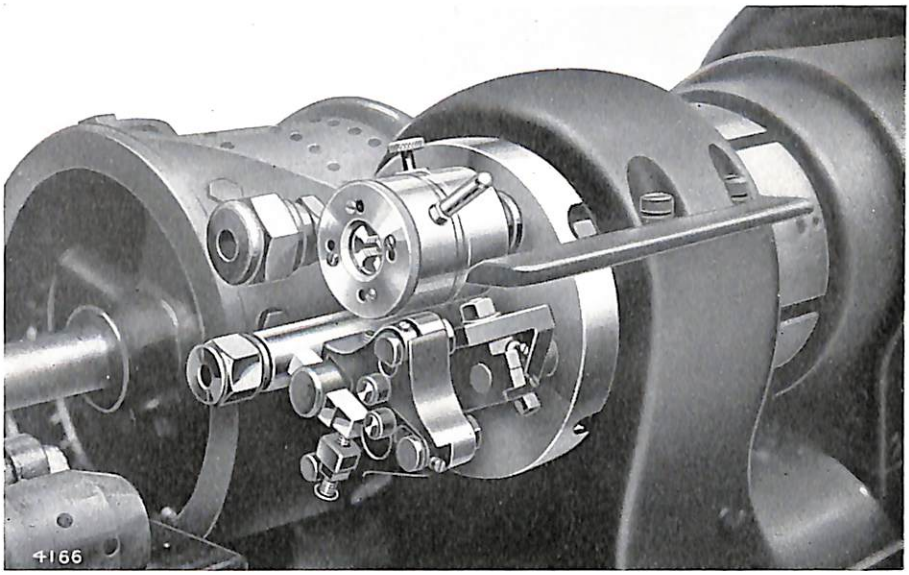


Fig. 29—Bracket for closing the diehead on a Cleveland Model A Automatic

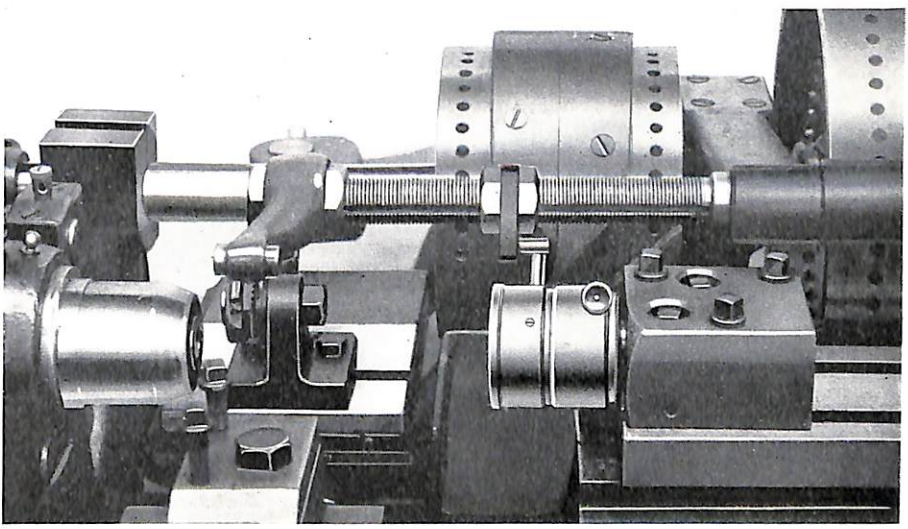


Fig. 30—Closing arrangement on Cleveland Model B Automatic.

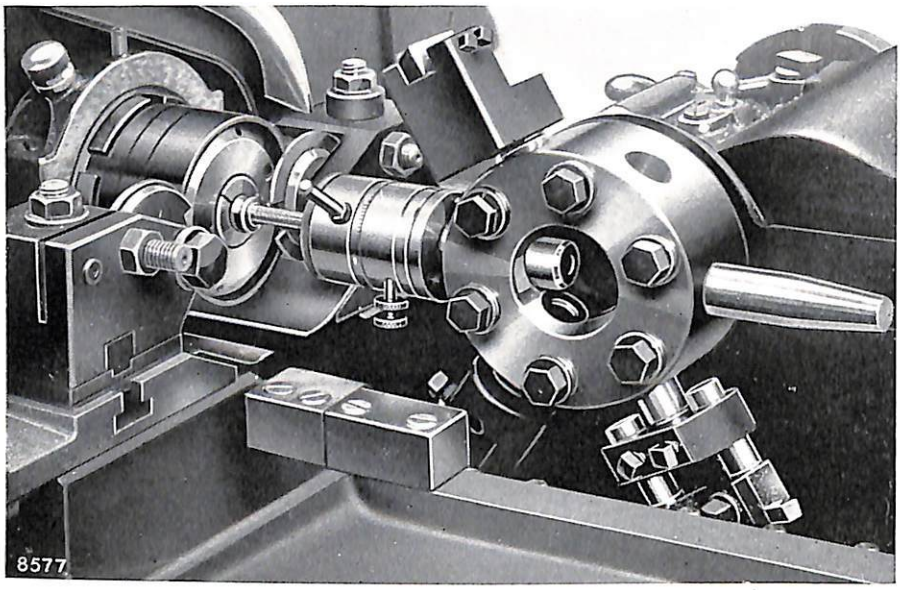


Fig. 31—On Brown & Sharpe Automatic Screw Machines the closing handle strikes a plate on the body of the machine.

Brown and Sharpe Automatic Machines. On these machines the diehead is closed by the closing handle striking a plate on the body of the machine (Fig. 31).

COVENTRY ROTATING DIEHEADS

These are for use on rotating spindles and are made in two types :—

With closing sleeves and standard soft shanks.

These dieheads are used on drilling machines and automatics. The diehead is opened by arresting the travel of the spindle allowing the front of the diehead to pull off and open in the same manner as the stationary diehead. Closing is effected by pushing the closing sleeve forward by means of the closing bracket, or yoke, the distance E, page 59.

Morse taper or special shanks can be supplied. See page 59 for overall dimensions.

With detent pin withdraw sleeve for opening the diehead.

These dieheads are suitable for use on multi-spindle autos, screwing machines and drilling machines. The front of the diehead does not pull off thus making this type more suitable where the screwing spindle or head has to be fed by hand or automatically during the threading operation. Diehead is

opened by moving the detent withdraw sleeve backwards by means of the opening and closing yoke, or bracket. Closing is effected by pushing the sleeve forward as described above. This diehead is useful for screwing components which are *loosely held*, the drive being taken by a keyway, hexagon or square part, or some projection on the sample.

Threads as short as two or three pitches can be screwed.

With this arrangement it is unnecessary to arrest the travel of the spindle to open the diehead therefore feed or cam pressure can be applied up to the instant of opening.

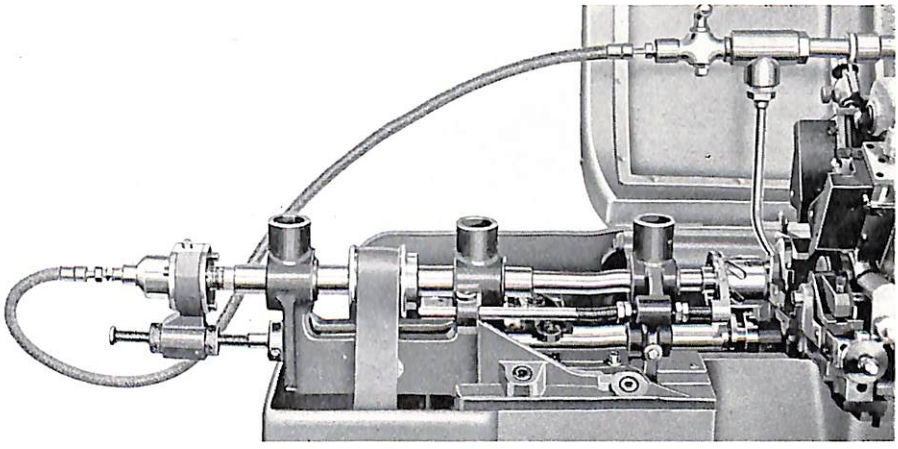


Fig. 32—Coventry Diehead on a Wickman 10 m/m Automatic.

10 m/m Wickman Auto, Fig. 32, shows the $\frac{1}{4}''$ Coventry rotating diehead fitted to the machine spindle by an adaptor which replaces the standard shank.

Opening and closing of the diehead whilst rotating is obtained by means of the closing yoke or glut and the screwed rod and locknuts shown.

The longitudinal movement is controlled by a suitable cam and cam lever (not shown) connected to the spindle.

A special cam is arranged to advance the diehead rapidly towards the work. Just previous to striking the end of the screw the cam is arranged to provide a traverse of the spindle slightly slower than the pitch of the thread to be cut ; this feeds the diehead on to the work at approximately the correct rate of travel thus providing a good start of thread.

The diehead is opened by arresting the traverse of the spindle approximately 1/16″ before the end of the threading operation, or

equal to the engagement of the detent pin thus allowing the front of the diehead to pull off the detent pin and open.

During the opening movement of the diehead the closing sleeve moves backwards carrying the closing yoke with it. On the return stroke the closing yoke is carried backward with the diehead until the locknuts stop the backward travel of the closing yoke, but the spindle still continues to move backwards due to the cam pulling the diehead through the closing sleeve a sufficient distance to close the diehead whilst rotating. The amount of this closing movement is regulated by means of the locknuts shown. Internal oil supply is provided.

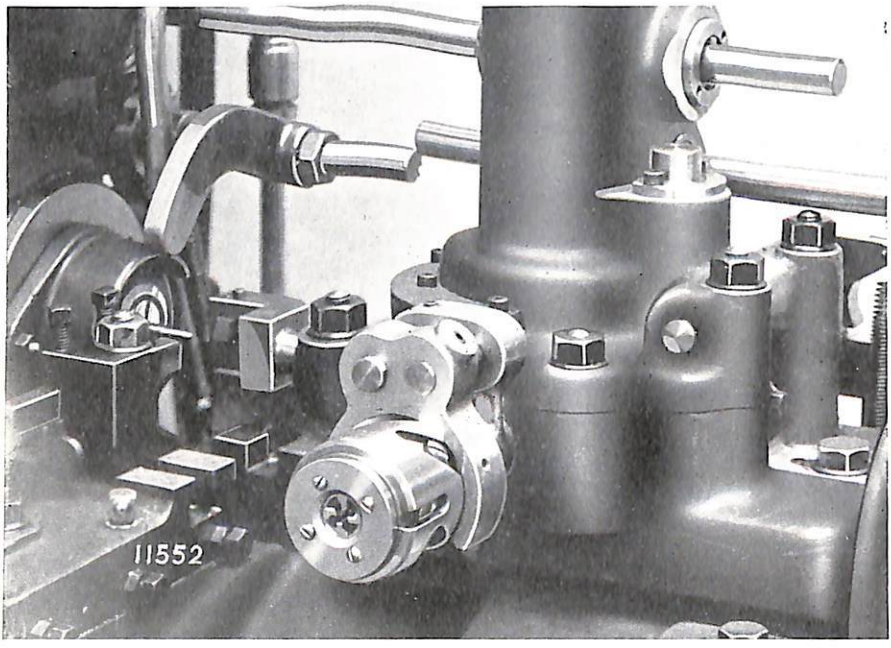


Fig. 33—Cam-operated closing arrangement for a rotating diehead on a Brown & Ward $\frac{5}{8}$" Automatic Screw Machine.

Brown & Ward $\frac{5}{8}$" Automatics (Fig. 33). The Diehead is held in the turret and rotated at a suitable speed in the same direction as the work and is fed forward by means of a cam. At the end of the cam stroke the front of the diehead continues to draw forward until the scroll is pulled off the detent pin when it immediately opens.

When the turret is indexed round to the other tool a cam pushes forward the glut shown in Fig. 33 which moves the sleeve and by means of the spiral slots the diehead is closed again ready for the next operation.

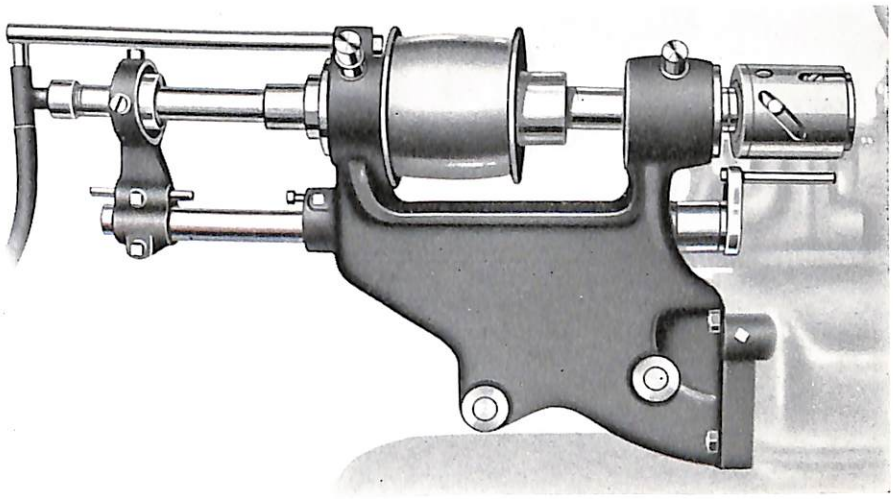


Fig. 34—Screwing attachment on a Petermann Automatic Screw Machine.

Petermann Automatic Screw Machines. The diehead is mounted on a rotating spindle carried on a bracket bolted to the end of the machine.

As the work revolves clockwise the diehead is arranged to revolve at a higher speed in the same direction.

The movement of the spindle is arrested by an adjustable stop which opens the diehead.

Closing is effected by a special sleeve which has two spiral slots engaging the closing pins on the diehead.

The diehead is attached to the spindle by means of a screwed adapter replacing the standard shank. The screwing head illustrated cannot be fitted to the older model of the Petermann auto. The dieheads are balanced to run at high speeds, and are fitted with a sheet metal guard.

Multi-Spindle Automatics. On these machines the diehead is generally carried on a special screwing and tapping spindle which revolves continuously in the same direction as the work, either slower or faster depending on whether the work spindles rotate in a clockwise or anti-clockwise direction. The difference in speed between the two spindles represents the

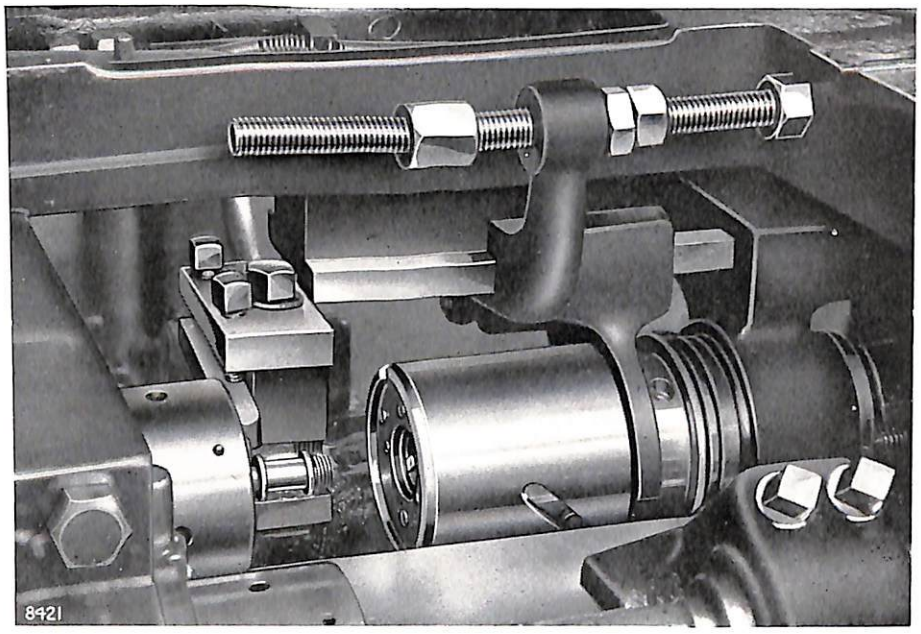


Fig. 35—Coventry Rotating Diehead on Types F. & G. Gridley 4-spindle Automatics.

screwing speed. Taking the four spindle Gridley (Fig. 35) as an example, the method of operation is as follows. The diehead at the appropriate moment is brought forward by means of a cam to strike the end of the work. When the dies secure a hold on the work the diehead and spindle are carried forward due to the guiding action of the non-cutting part of the die. At the same time the bracket or yoke shown is carried forward with the diehead until the arm comes into contact with the adjustable locknuts. This stops the travel of the bracket which is in contact with the Detent pin withdraw sleeve of the diehead. The action of screwing still carries the diehead forward but the Detent withdraw sleeve being held back by the bracket gradually withdraws the Detent pin until the diehead is free to open, then due to the action of the opening springs the front of the diehead is partly rotated causing the dies to be withdrawn from the work, thus stopping the travel of the diehead. The partial rotation of the front part of the diehead causes the diehead closing sleeve to travel backwards due to the action of the spiral slots shown. The diehead, still rotating, can dwell in this position until the return cam is brought into action ; this withdraws the diehead from the

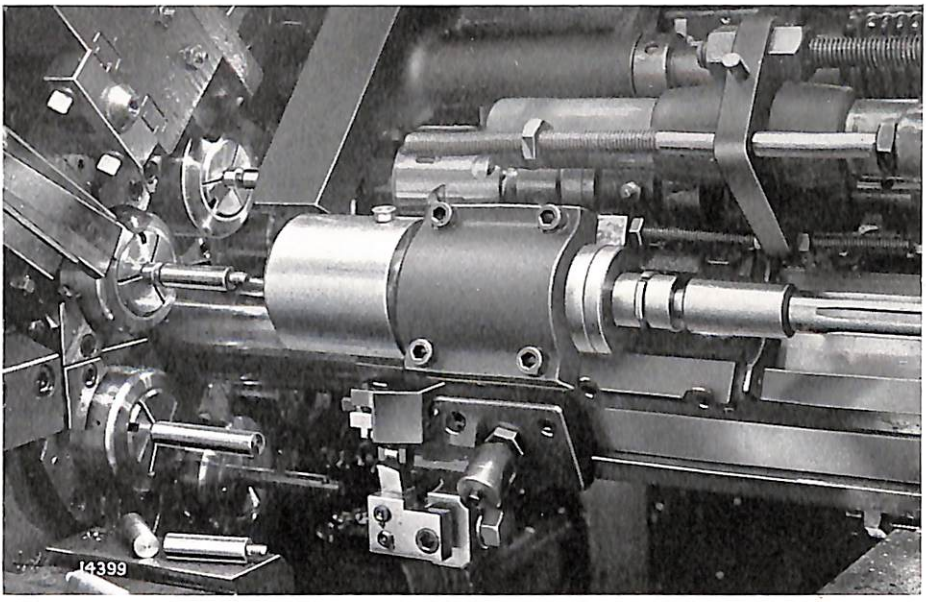


Fig. 36—A Coventry Diehead fitted to a New Britain 6-spindle Automatic Bar Machine. (Diehead is at the rear).

work, carrying the closing bracket along with it until the arm strikes the locknuts. The diehead spindle due to the action of the cam continues to move backwards ; as the closing sleeve is held by the fork on the bracket, the spiral slots shown cause a partial rotation of the closing sleeve, which is transmitted to the front part of the diehead, thus completing the closing operation as shown in the illustration. The operation is similar on most of the multi-spindle autos but the closing bracket must be designed to suit each machine.

Rotating Taper Threading Diehead. This type of diehead is for use on automatic machines having reverse to screwing spindle. The diehead does not open at the end of the cut but is reversed off the work. The closing sleeve shown in Fig. 37 is prevented from moving endways by means of a yoke.

Two pins in the diehead body engage angular slots in the sleeve and actuate the opening mechanism during the forward screwing motion of the diehead, thus providing the taper required.

Different tapers require different closing sleeves.

On page 62 is a list of Multi-Spindle Automatics to which Coventry Dieheads, Style CH, can be fitted.

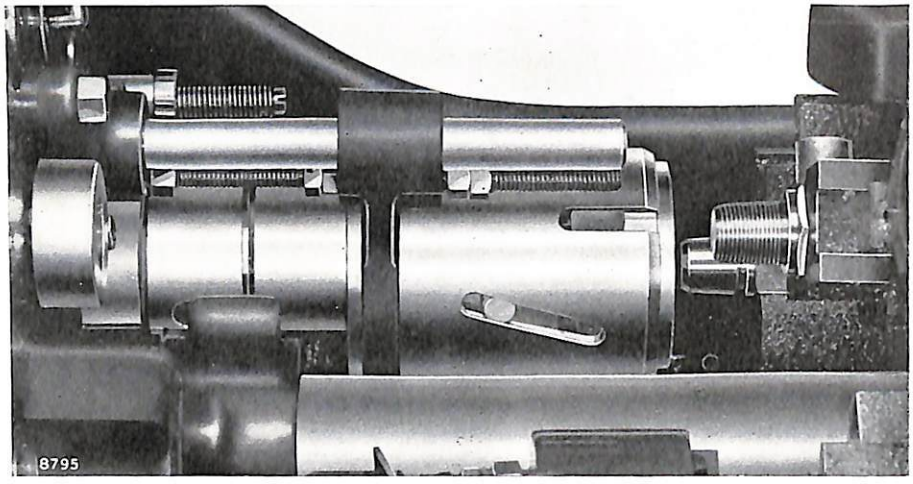


Fig. 37—Coventry Diehead arranged for taper threading on a New Britain 4-spindle Automatic Chucking machine.

Drilling Machines. For some classes of threading operations, drilling machines are more suitable than capstan lathes or screwing machines.

Fig. 38 shows the standard arrangement as applied to Herbert All-electric Drilling Machines using a $\frac{1}{2}$" CH Diehead.

A rotating type of diehead is used which enables the diehead to be opened and closed without stopping the spindle. The operation is as follows :—

The diehead is fed on to the work from the position shown, to approximately 1/10" from the end of the threading operation. The travel of the diehead is then arrested by means of a stop collar on the drill spindle which projects beyond the top of the drill column; this allows the front of the diehead to pull off the detent pin and open in the usual manner.

During the opening operation the diehead closing sleeve moves backwards 11/16". On the return stroke of the spindle the diehead closing sleeve coming in contact with the fixed bracket shown is moved forward a distance of 11/16" thus closing the diehead. Different types of closing brackets are required for other makes of machines.

The component may be held in an air-operated chuck, vice or special fixture.

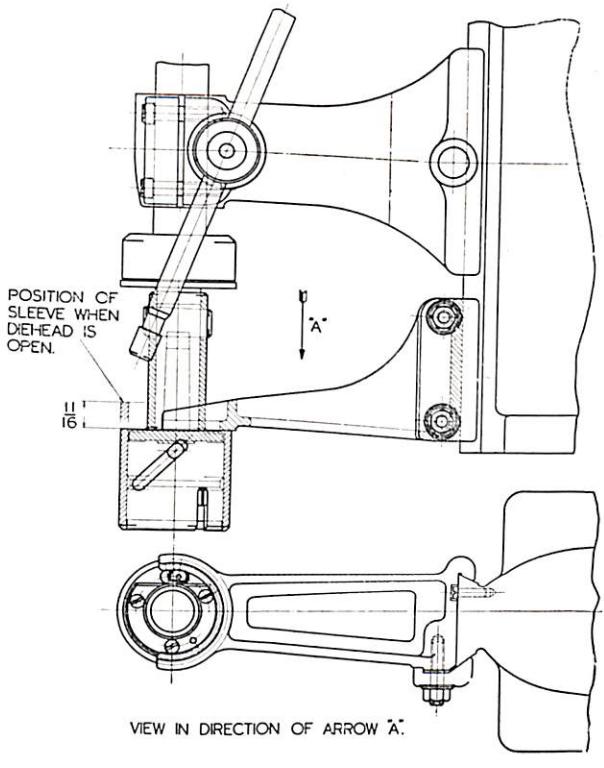


Fig. 38—Arrangement for closing the diehead when the work is held in a chuck, vice or fixture. (A ½" diehead is shown).

Fig. 39 shows the type of Coventry Diehead used when the component to be screwed is loosely held in a fixture, or on a pin where a hexagon or square part, or a keyway in the sample is used to take the drive. It shows the diehead at the commencement of the opening movement. The operation is as follows :—

Closing rod locknuts are adjusted to make contact with the closing bracket approximately 1/10" before the end of the screwing operation, that is, the amount of the engagement of the detent pin of the diehead.

When the travel of the closing glut is arrested by the locknuts through the closing rods, the diehead, owing to the action of the dies continues to travel forward, but the diehead opening collar which is connected to the detent pin is arrested. As the diehead

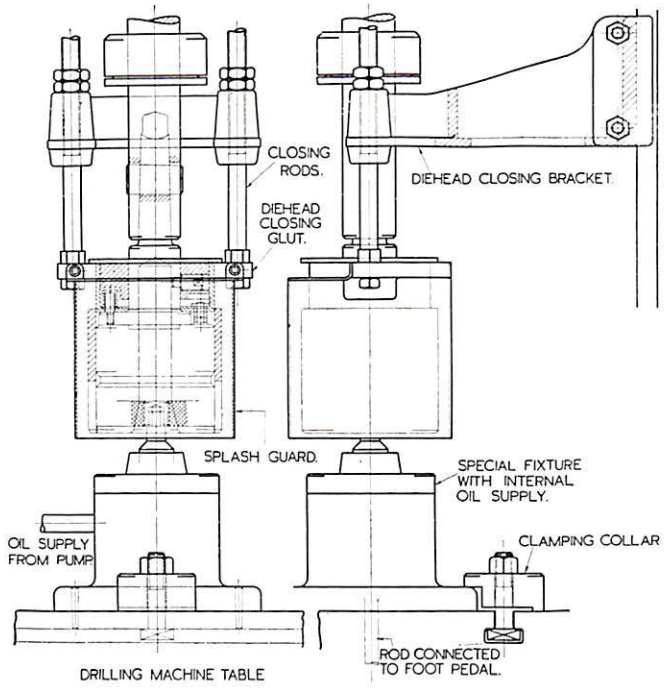


Fig. 39—Arrangement for fitting a Coventry Diehead to a Herbert Drilling Machine when components are loosely held.

moves forward the detent pin is withdrawn allowing the diehead to open. During the opening movement the diehead closing sleeve moves backward until it is in contact with the underside of the closing glut.

The machine spindle is now returned to the top position which brings the hexagon collar of the closing rods into contact with the closing bracket thus arresting the backward travel of the closing glut. The backward travel of the spindle continues but the diehead closing sleeve being in contact with the closing glut is pushed forward to the position shown.

Three springs and spring pins return the opening collar and the detent pin to the closed position shown. The diehead is now ready for a new cycle of operation.

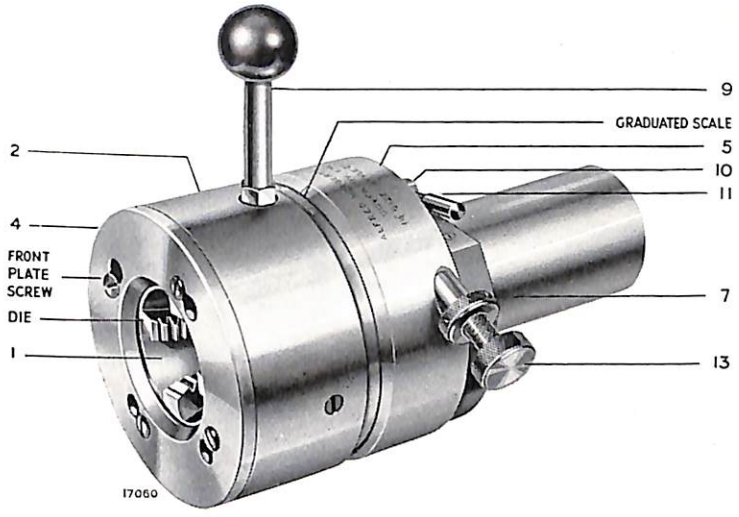


Fig. 40—Indexed view of diehead for reference to operating instructions.

OPERATING INSTRUCTIONS

Care of Diehead. Before putting into use, the diehead and dies, whether new or not, should be examined to make sure that they are in good working order, free from burrs or dents, particularly on the die seats, and clear of chips, dirt, or gummy oil. Continuous good work can be obtained with Coventry Dieheads and Dies only if they are kept clean and properly lubricated with thin oil.

If the opening and closing mechanism does not work easily, immerse the diehead in paraffin and operate the moving parts, then after shaking paraffin out, lubricate with a thin oil of non-gumming qualities.

Closing the Diehead (Fig. 40). Mount the diehead in the machine with the closing handle in a convenient position, preferably at the top ; the diehead is then closed by pushing on the ball handle (9) until the detent pin (10) springs into the slot at the back of the scroll. If only one cut is necessary the small handle (11) behind the body can be in either the roughing or finishing position, the diameter then being adjusted by the tangent adjusting screw (13) and locked by nut (7).

Opening the Diehead. Coventry Dieheads are self-opening at the end of the cut. The opening of the dies is effected by arresting the forward motion of the diehead or work ; the dies

For R.H. Threads. For L.H. Threads.

Fig. 41—Showing direction of work rotation and order of inserting dies.

then continue to screw themselves forward until the scroll is pulled off the detent pin, when the opening springs cause the dies to open instantly.

Opening the Diehead by Hand. On the $\frac{1}{4}''$ and $\frac{5}{16}''$ diehead the only means whereby the head can be opened by hand is by grasping the front portion and pulling the scroll off the detent pin.

On $\frac{1}{2}''$ to 2″ dieheads hand opening is done by withdrawing the detent pin from the scroll (See Fig. 40). First push handle (9) to relieve the pressure of the opening springs, then pull out the detent pin handle (11) when the dies will open instantly.

On the 3″ and $4\frac{1}{2}''$ dieheads there is a special handle for the purpose of opening ; its action is to force the scroll off the detent pins of which there are two.

Changing the Dies. When changing the dies, first close the diehead, then slack off the front plate screws about two threads, turn the front plate in an anti-clockwise direction and it will then lift off. (NOTE.—For $\frac{1}{4}''$ and $\frac{5}{16}''$ Dieheads the screws must be taken out).

Choose the type of die as recommended on page 4, or if aircraft steels are to be cut, refer to the table on page 5. Each individual die has its serial No. 1, 2, 3 or 4 on the front edge, and these should be assembled in the diehead in numerical order in a clockwise direction, but it is immaterial which slot of the diehead is taken to start. The above applies both to R.H. and L.H. dies (See Fig. 41).

The illustration Fig. 2 shows a set of dies with the serial number on the front edge ; the type of die, diameter, pitch of

thread and the gauge number on one side, and on the reverse side the registered trade mark, with the addition in the case of special dies of an S.D. number. When ordering replace dies it will help to avoid mistakes if these particulars are quoted.

Setting the Dies to Correct Diameter. (See Fig. 40). To set the dies to correct diameter, first put the handle (11) in finishing (or—) position; then set by the tangent adjusting screw (13) and locknut (7) until the indicator line is opposite the zero line on the graduated scale. When turning the tangent adjusting screw (13) always relieve the pressure of the opening springs by pushing on handle (9). This makes the adjustment more sensitive. Nominally the dies should cut correct diameter when the indicator line is at zero and the handle (11) in the finishing position. It is better to commence with the indicator set one division on the large side, make a sample, test with gauge and then use tangent adjusting screw for final setting. Do not attempt to take a cut of .001" when setting as the dies will not bite with such a cut and the next sample would almost certainly be undersize.

Speed of Work. The speed depends upon :—

(1) The material being screwed ;
(2) The finish and accuracy required ;
(3) Pitch and form of thread ;

and, while impossible to lay down any hard and fast rule, the following table will serve as a useful guide :—

Tough steel	5 to 8 ft. per min.
General mild steel work	10 to 20 ft. per min.
Free cutting bolt steel	25 to 50 ft. per min.
Cast iron	8 to 12 ft. per min.
Brass and copper	Speeds as for turning

Direction of Work Rotation. When cutting right-hand threads, the work should run in the forward direction and for left-hand threads in reverse direction. See Fig. 41.

Lubrication. Always have the dies well lubricated when cutting. A good quality cutting oil will maintain the cutting edge longest, thus increasing the life of the dies. For speed and finish a good soluble oil or cutting compound can be used and is recommended for all cutting speeds higher than 15 feet per minute.

Where it can be arranged it is very desirable to have a good supply of oil delivered from the back of the diehead shank and flowing out at the mouth. This washes the chips out and keeps

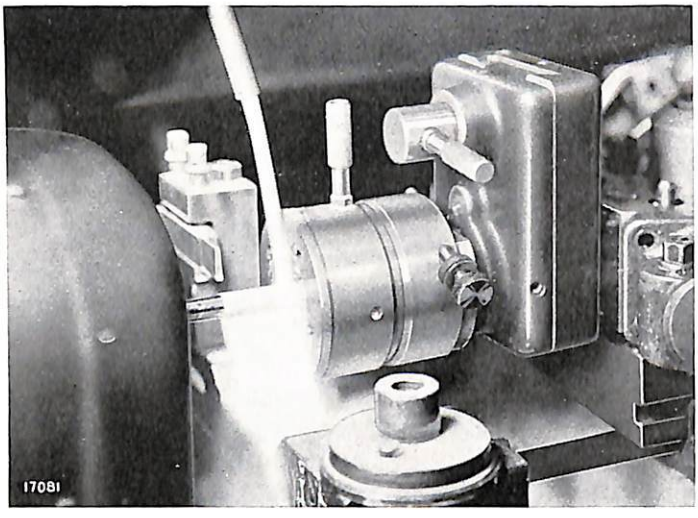


Fig. 42—An ample flow of cutting lubricant should be used when cutting threads.

all the working parts free from sediment. Such an internal oil supply can usually be fitted on automatics and turret lathes. It is also desirable that the oil be freed from solid matter either by filtration or by means of settling tanks.

Roughing and Finishing (See Fig. 40). The small handle (11) which will be found at the back of all dieheads except the $\frac{1}{4}''$, $\frac{5}{16}''$, 3″ and $4\frac{1}{2}''$ sizes, is used for the purpose of taking two cuts without disturbing the adjusting screw. It is secured to the detent pin (10) which holds the scrolls in the closed position. This detent pin has two flats at different distances from its axis. These two flats engage the hard steel tooth let into the back of the scroll and hold it in either the roughing (or +) or finishing (or—) position according to the position of the handle.

If two cuts are necessary the first cut should be taken with the handle (11) in the roughing position ; then, before taking the second cut, turn the handle over to the finishing position. On coarse threads where several cuts are necessary the tangent adjusting screw can be used.

Whenever the diehead is working, this handle (11) must be definitely in either the roughing or finishing position and not in any intermediate position between them.

NOTE.—The handle should not be moved from one position to the other when diehead is closed, as this causes excessive wear on the detent pin.

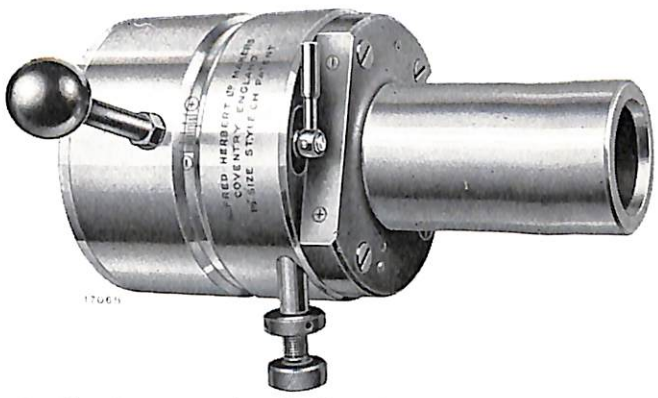


Fig. 43—Showing graduations for fine adjustment and detent pin handle for roughing and finishing cuts.

On the 3″ and 4½″ dieheads roughing and finishing is done by means of the tangent adjusting screw, which carries a graduated collar for the purpose of accurate location.

The 3″ diehead has two tangential screws, one for making size adjustments, the opposite one acting as a dead stop.

The 4½″ diehead is fitted with a small handwheel on the tangent adjusting screw and the graduated collar, which is adjustable, has a single tooth which engages a corresponding tooth on a fixed collar, this acting as the stop for the final diameter, any number of cuts being possible prior to the two teeth engaging.

To catch the thread when taking the second cut, arrange the dies in the diehead so that the one with the first full thread nearest the front of the die can be clearly seen. It is then an easy matter to slip this die into the thread on the work as it rotates.

Cutting the Thread. While Coventry Dieheads can be successfully operated by semi-skilled labour, the best results can be obtained only after a fair amount of practice, developing a delicate sense of touch.

The dies should not be forced on the work, as this may result in damage to the cutting edges. A gentle pressure should be applied until the dies "bite". The pressure should then be maintained as the dies travel along the work, but only to neutralise any drag set up by the weight of the turret or saddle on which the diehead is mounted.

The work before screwing should be as nearly as possible the correct diameter or slightly oversize. The best results are obtained when the dies remove about .001″ from the full diameter.

In black bolt work the stampings should not be more than .015″ oversize.

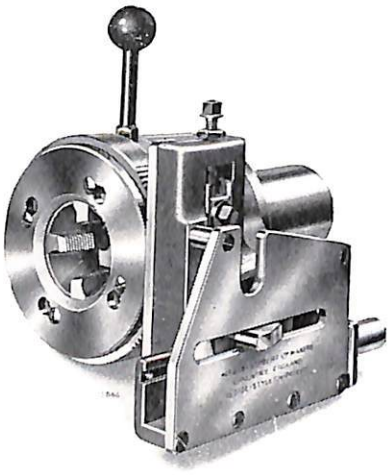


Fig. 44—Taper Threading Diehead.

CUTTING TAPER THREADS

Using Standard Diehead. Short tapers of limited length and not more than 4° included angle can be cut with taper dies in a standard diehead but a taper threading diehead is always preferable.

All such dies have to cut along their whole length so that the guiding action is lost (See Fig. 3); this method is satisfactory for such tapers as B.S.P. threads (taper) and Briggs' standard pipe taper threads.

A taper die has its cutting face ground parallel to the axis of the work, that is, the $2\frac{1}{2}°$ face angle of the standard die is removed so that it can be sharpened on the throat only (Fig. 45). These dies leave four slight ridges along the thread where the dies finish cutting, but except for close limit work these are not detrimental.

Using Taper Threading Diehead. Longer tapers than those mentioned above can be cut by using a taper threading diehead, as illustrated in Fig. 44. The dies used with this diehead have the guiding action of standard dies.

The construction is such that the dies open out as they travel along thus forming the taper.

The taper is governed by a former carried on a former bar, the bar being forced outwards by a spring and held stationary by a stop or fixed abutment on the machine while the diehead travels forward.

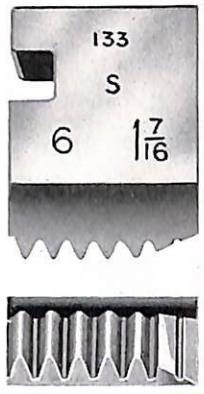


Fig. 45—The cutting face of taper dies used in a standard diehead must be ground to eliminate the self-guiding action.

The former has an inclined slot which engages a corresponding projection on an adjustable plate clamped to a vertical sliding rack, which rotates the diehead scroll by engaging a gear segment attached to it. The outward movement of the dies is thus positively controlled by the former as the diehead travels forward.

The abutment is set to arrest the motion of the former bar, just before the end of the cut, thus causing the diehead to open.

One former and adjustable plate serves for all diameters having the same taper but a different former and plate are required for each taper.

The diehead is intended to be mounted on the turret of the machine, and it is necessary for the purchaser to provide the abutment referred to above.

The advantage of cutting taper threads by this method is that the work is finished quite round and smooth without the four ridges left by taper dies where the dies cease cutting, thus producing a better-fitting screw, and also the danger of causing severe strains by running the work too far into the dies does not exist, as with taper dies used in the standard diehead.

The taper threading diehead can be used, if required, for screwing parallel threads by fitting it with a short parallel former and adjustable plate, which act as detents to hold the diehead closed.

For cutting taper threads with a diehead which is required to revolve, an arrangement as shown on the New Britain Automatic in Fig. 37, can be supplied.

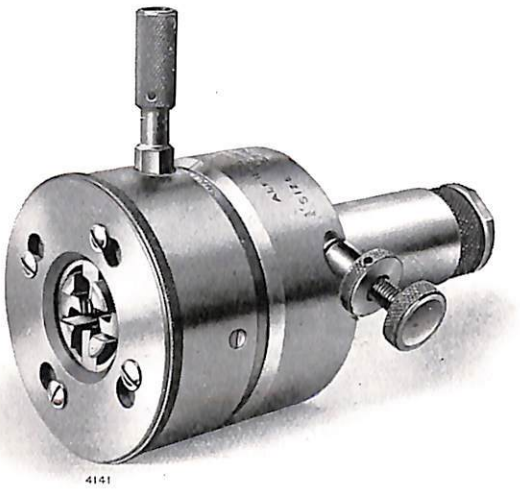


Fig. 46—Diehead with internal stop in position.

DIEHEAD OPENED BY INTERNAL STOP

The following classes of work can be handled better with an internal stop for opening the diehead than by the standard "pull-off" method.

(*a*) Screwing black bolts when the bolt heads are loosely held in a socket.

(*b*) Screwing brass castings close up to a shoulder which, in chucking, may vary in position.

(*c*) Screwing threads of a definite length when the end of the work varies in position, and the usual stop arrangement would not give the desired results.

When the length of thread is determined by the end of the work a plain plug is used. This strikes the end of the work and so causes the diehead to open.

When threading up to a shoulder a pronged tube is used. This tube is gashed so that it can project slightly in front of the dies and prevent them striking the shoulder of the work. When the stop strikes the shoulder, this arrests the back part of the diehead and allows the front to draw forward and open the dies.

NOTE.—When fitted with pronged internal stop the capacities of Coventry Dieheads are reduced as follows :—

Size of Diehead	$\frac{1}{2}''$	$\frac{3}{4}''$	$1''$	$1\frac{1}{4}''$	$1\frac{1}{2}''$	$2''$	$3''$
Reduced Capacity	$\frac{5}{16}''$	$\frac{1}{2}''$	$\frac{5}{8}''$	$\frac{7}{8}''$	$1\frac{1}{8}''$	$1\frac{1}{2}''$	$2\frac{1}{4}''$

Internal stops cannot be fitted to $\frac{1}{4}''$, $\frac{5}{16}''$ and $4\frac{1}{2}''$ dieheads or to either of the fine thread dieheads.

GRINDING COVENTRY DIES

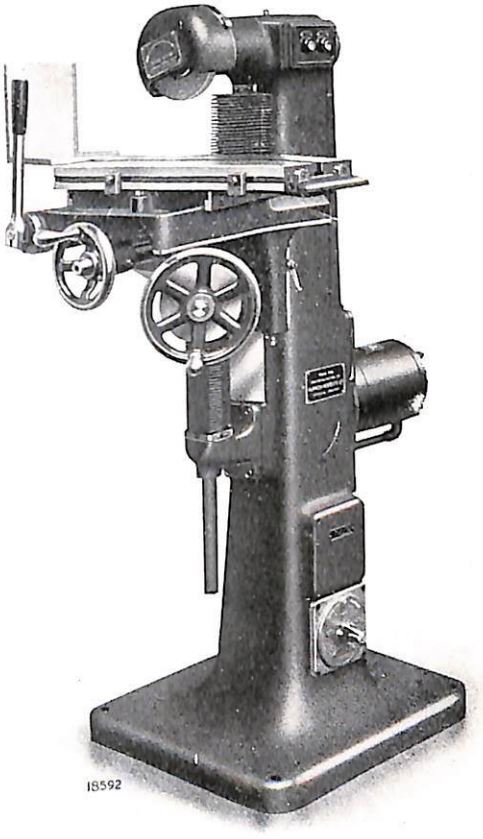


Fig. 47—The Herbert Junior Surface Grinder ideal for grinding Coventry Dies and for a wide range of tool and surface grinding.

Dies must be kept sharp. *They cannot be ground properly by hand :* the special fixtures which are supplied must be used and all dies in a set must be ground on the throat at the same time. The diagrams, page 47, show the fixtures and baseplates to use to obtain correct angles for various materials.

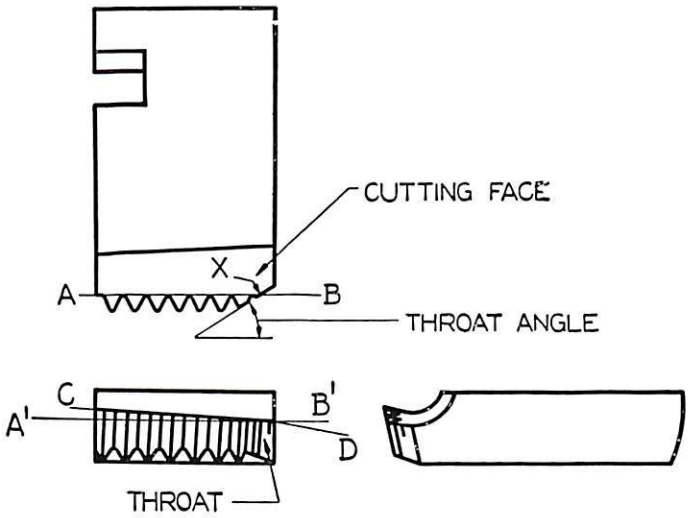


Fig. 48—Diagram illustrating cutting and self-guiding action of Coventry Dies.

Before describing the grinding operation it is desirable to understand the cutting action of the dies.

Referring to Fig. 48 the lines A–B A^1–B^1 coincide with the centre line of the work ; it will be noticed that the line of the cutting face C D is inclined to the line A^1 B^1, therefore the actual cutting is done only by the edge on the throat of the die, the remaining threads being above centre and acting as a nut engaging the previously cut threads thus ensuring accuracy of pitch.

Dies are sharpened by grinding the throat of the die, as shown in Figs. 55 and 56. A Norton 1946I grinding wheel 7″ × $\frac{1}{2}$″ face is recommended. Sharpening can be done several times but ultimately the effect of this is to raise the height of the cutting edge above centre, along the line A B.

This is explained more clearly by the diagram, Fig. 49. If C D, C^1 D^1 is the throat angle of a new die, the intersection X, X^2 with the line A B A^1 B^1 (drawn tangential to the bottom of the threads), is at correct centre height.

If the throat angle is ground back to the line E F, the point X moves to position X^1 X^3, above the centre height A^1 B^1. It is therefore necessary to grind off the cutting face the amount shown cross hatched to bring X^3 into position X^4 on the centre line A^1 B^1.

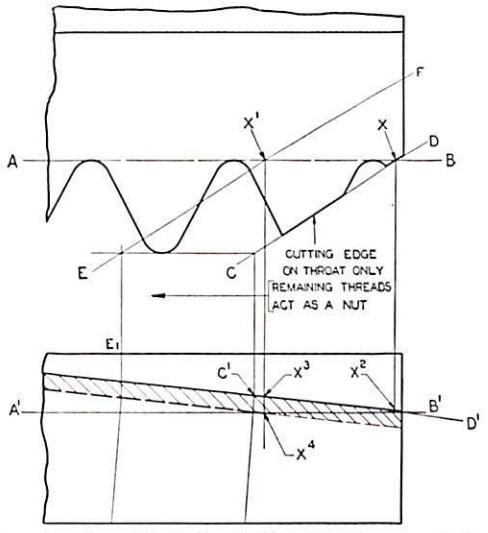


Fig. 49—Diagram showing the effect of grinding the throat and the need for grinding the cutting face.

Grinding Fixtures. One fixture, Fig. 52, is required for each size of diehead, to grind Mark S, X, M, M5 and B dies for right-hand threads.

For left-hand threads corresponding left-hand fixtures are required.

These fixtures enable all four dies of a set to be ground together on the throat angle ensuring the correct angle and equal lengths of throat.

The same fixtures are used for grinding the cutting face of the dies (Fig. 61).

Baseplates. The 20° throat angle and 12° cutting face are obtained by means of the fixture without the use of a baseplate. The cutting face is actually ground parallel to the bottom of the die, the 12° top rake being obtained by the radial location of the dies in the diehead.

For other angles a baseplate must be used with the fixture (See Figs. 59 and 60).

A 45° throat is now often used for finishing cuts and for screwing close to a shoulder. The baseplate hitherto supplied (See Fig. 61) must be packed up to obtain the 45° throat angle and clamps must be used on the lugs of the fixture to hold both fixture and baseplate to the grinding machine table.

A new type of baseplate (Fig. 50) which will deal with *all* the angles is now available.

Fig. 50—New type baseplate for use when grinding 15°, 33° and 45° throat angles and 5° and 13° rake angles.

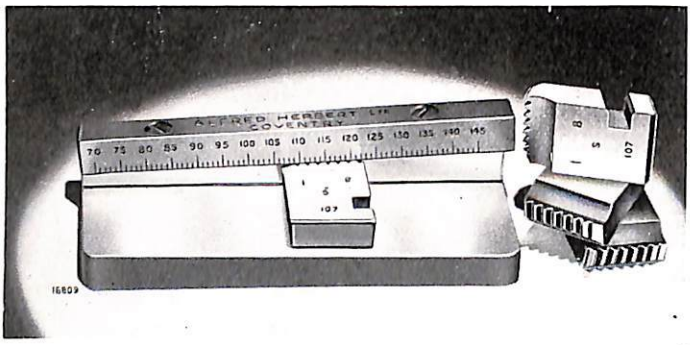


Fig. 51—Height gauge used for testing the dies after grinding.

Height Gauges. For checking the height of the cutting edge after grinding. Each size of diehead, except the $4\frac{1}{2}''$ size, requires one gauge for R.H. dies and another for L.H. dies for all sizes. The $4\frac{1}{2}''$ requires two gauges each for R. and L.H. dies.

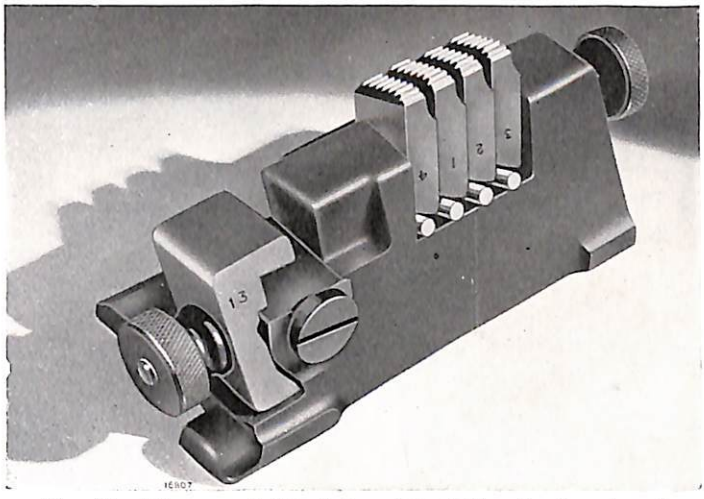


Fig. 52—Dies mounted in fixture for grinding the throat angle.

Grinding the Throat Angle. Dies should be ground carefully so that their temper is not drawn. When the dies become dull they are sharpened by grinding the throat angle (See Figs. 55 and 56).

After lightly clamping the dies in the fixture shown in Fig. 52, (the order is immaterial) gently tap the teeth with a copper or lead hammer until the locating rollers have no shake. Locating rollers are not necessary in left-hand fixtures as the dies are located on the bottom of the slot in the fixture (See Figs. 53 and 54).

The fixture should be used with or without base-plate, according to the throat angle required, as given in Figs. 59 and 60.

Grinding the Cutting Face. When the throat angle has been ground a few times it becomes necessary to grind enough off the cutting face to maintain the original height.

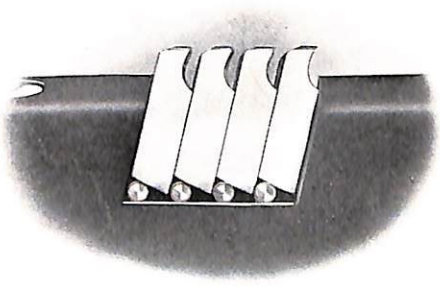


Fig. 53—Locating Rollers in fixture for right-hand dies.

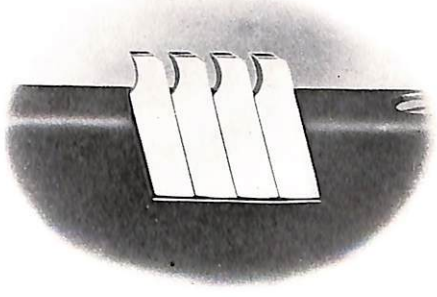


Fig. 54—Fixture for left-hand dies.

Fig. 55—Grinding 20° throat angle (without baseplate).

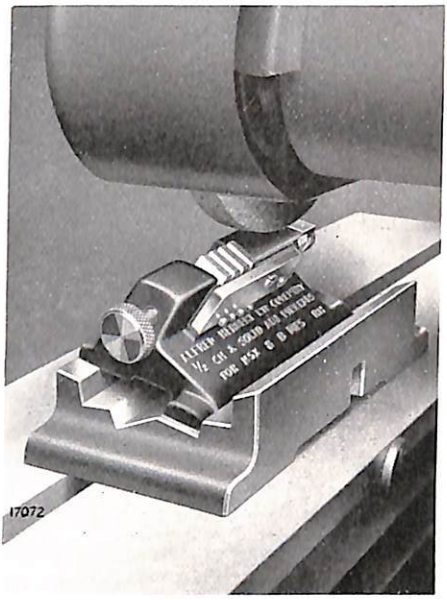


Fig. 56—Grinding 33° throat angle using new type baseplate.

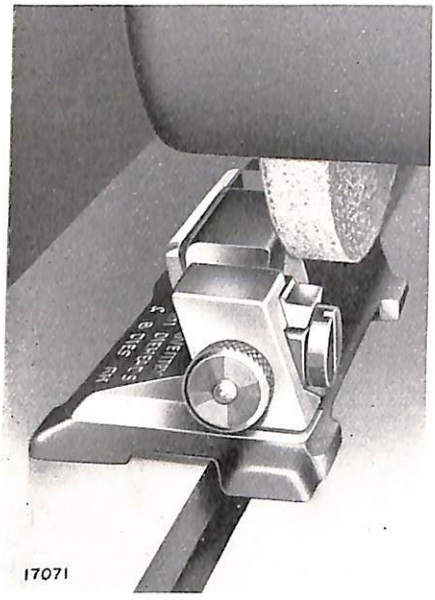


Fig. 57—Grinding cutting face to provide 12° top rake when the die is in the diehead.

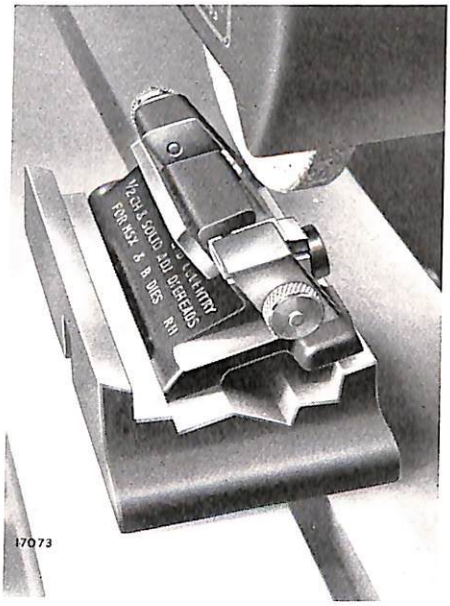


Fig. 58—Grinding cutting face to provide 1° negative top rake when the die is in the diehead.

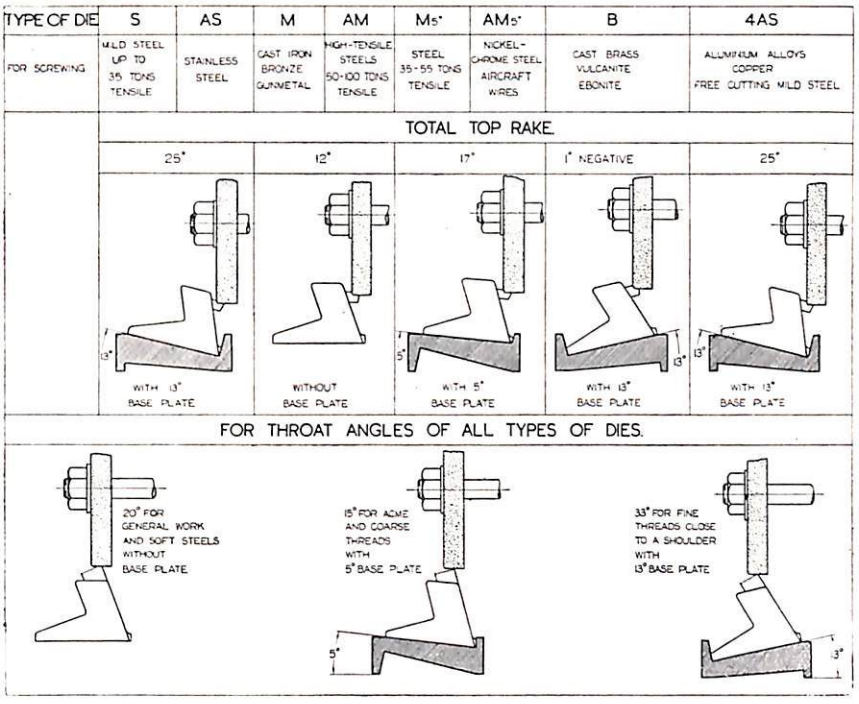


Fig. 59—Table indicating use of standard fixture and old type base plate.

(*Note.—The total top rake is obtained when dies are in position in diehead*).

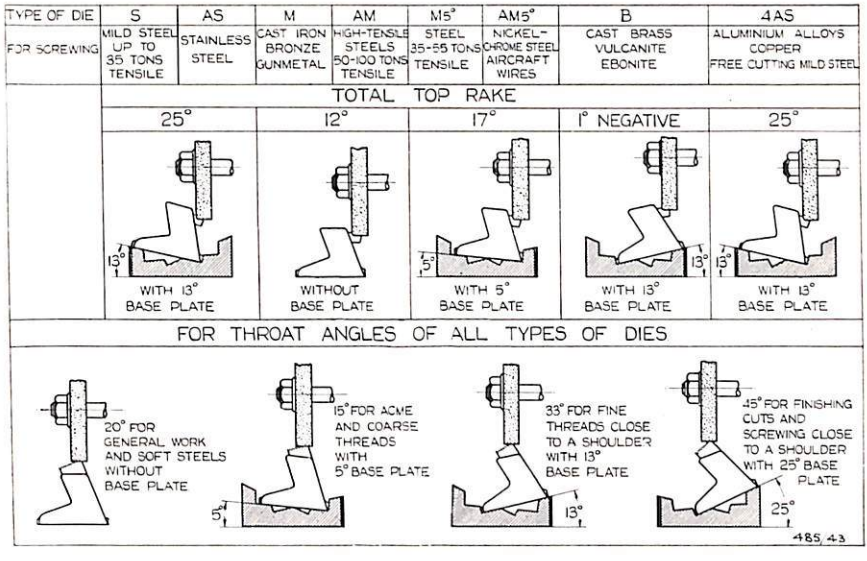


Fig 60.—Table indicating use of standard fixture and new type base plate

(*Note.—The total top rake is obtained when dies are in position in diehead*).

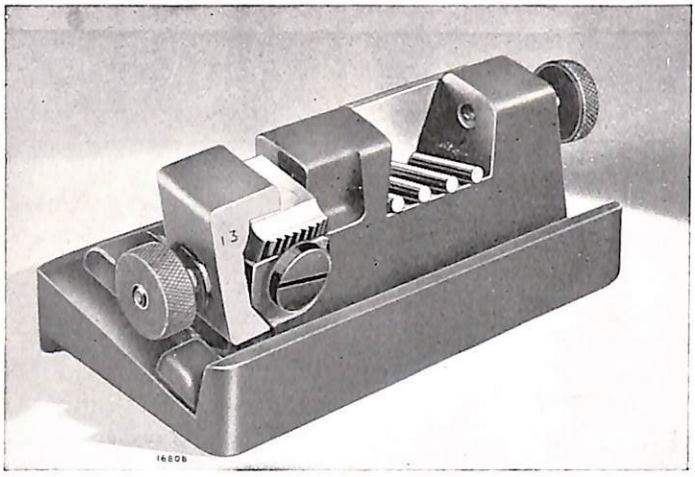


Fig. 61—Die mounted in fixture for grinding cutting face, using old type base plate.

To grind the cutting face the dies are mounted in the fixture, as shown in Fig. 61, the base-plate being used where necessary, as indicated in Figs. 59 and 60.

Testing Height of Cutting Edge. After grinding the cutting face, the height of the dies must be tested in the gauge illustrated in Fig. 51.

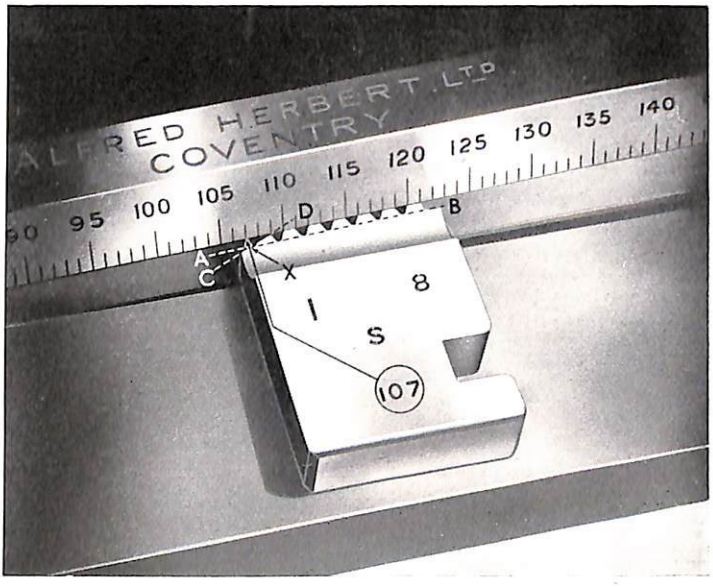


Fig. 62—If the dies are correctly ground the point of intersection x should coincide on the gauge with the number stamped on the die.

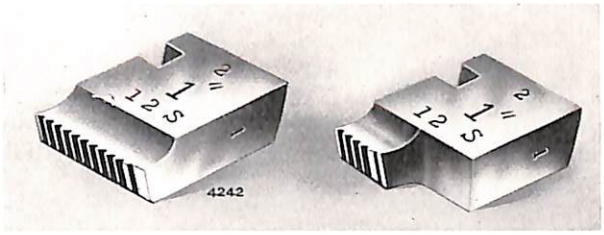


Fig. 63—To avoid a long throat after repeated grinding dies may be ground back as shown on the right.

The threads of the die are placed under the scale and the die is moved to the left in the taper recess until contact is made with the bottom of the scale.

The point X, Fig. 62, which is the intersection of the throat angle and a line A B tangential to the bottom of the threads, should, if the die is correctly ground, coincide with the number on the scale corresponding with the gauge number stamped on the face of the die. (See also Fig. 4).

If a number lower than this is indicated, grind a little more off the throat angle ; if higher, grind more off the cutting face.

Each die of a set must be tested in the manner described.

If the die slots in the diehead are worn this has the effect of lowering the cutting edge and chatter may occur. To cure this the cutting edge must be raised slightly above the gauge number.

When the throat has become too long by repeated grinding, the front of the dies may be ground away, as shown in Fig. 63.

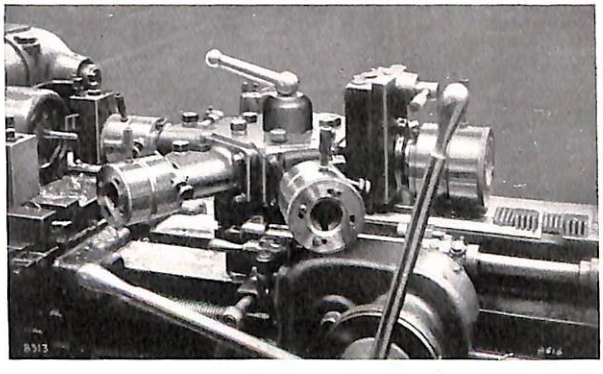


Fig. 64—Every Set of Coventry Dies must cut a good sample thread.

THE TECHNICAL COLLEGE, COATBRIDGE

TROUBLES AND REMEDIES.

In the following pages we deal with the difficulties sometimes experienced by users of Coventry Dieheads.

Dies will not Cut a Thread. First make sure that the dies are a complete set and placed in correct numerical order clockwise in the diehead. (See Fig. 41).

If this does not cure the trouble, return the dies for examination.

Rough Thread Produced. First place the dies in die grinding fixture and skim up the *throat* to make sure that the dies are in perfect balance. (See Fig. 52).

Next test the height of the cutting face in the height gauge and correct if necessary. (See Fig. 51).

If the trouble still exists, it may be due to the top rake of dies not being suited to the material and the dies should be returned for examination together with samples of the material being worked.

Chattered Threads Produced. First test dies in height gauge, as this trouble is usually caused by cutting edges being low.

If the dies are correct, the seat of the trouble may lie in the die slots. Try a feeler gauge at back of dies. If this shows less than .005″ play grind a little more off the cone to raise the cutting edges. If more than .005″ play the diehead body should be replaced.

Alternatively, chatter may be caused by lack of stability in the work itself, as when screwing a long way from the chuck. If mark S dies are being used and the work cannot be gripped nearer the screwed portion, first grind a little more off the cone—this gives a better grip on the work.

If this is not satisfactory mark M dies may be tried as these dies are not so keen as the S type and they therefore grip the work more firmly.

Variation in Diameter of Work. If the work varies slightly in diameter from one piece to another it may be due to either high cutting edges or to wear on the detent pin or tooth, giving different registration each time diehead is closed.

COLLEGE, COATBRIDGE

High cutting edges will cause squeaking and burning of work when cutting. Test dies in height gauge and grind top of face till correct.

If wear on the detent pin or tooth is suspected, dismantle the diehead as per operations 1 to 4 of instructions on page 53 and if examination of detent pin and tooth shows it to be necessary, these parts can be easily replaced. (See page 56).

Taper Threads. This is a trouble very difficult to diagnose as it may arise from so many causes.

First thoroughly clean the diehead, replace the dies, tighten the front plate securely, and then test the dies for play. If play is excessive, the diehead should be returned to us for repair.

Taper threads are frequently produced because the front plate is left loose which allows the dies to tip. This quickly causes wear in the die seats and aggravates the trouble.

Consistently Bad Threads. If good threads cannot be produced when all suggested remedies have been tried, the alignment of the machine in which the diehead is used should be checked.

Errors in alignment can often be compensated by making the cutting edge of the dies higher than standard. This height must be determined by trial, and must be maintained when dies are re-ground.

Diehead Fails to Open. This can be caused by chips or dirt behind the dies locking them and thus preventing the opening springs from functioning.

Cleaning may cure it.

If this is not the cause, try the pull-off by hand with the diehead closed. If the diehead will not open it is due to the closing spring screws being tightened up too far and thus preventing the scroll from coming off the detent pin.

Another cause may be a broken opening spring, Dismantle the diehead as shown on page 53, operations 1-6, when these can be examined and replaced if necessary.

Diehead opens prematurely or will not remain closed. First dismantle front portion and examine detent pin and tooth. These may have worn or chipped edges. New parts can be fitted as per instructions on pages 53 and 56. Alternatively the closing springs may have weakened or broken or the closing spring screws may have been damaged. New parts can be fitted according to the instructions in operation 10, page 56.

Clogging with Chips. This trouble may be met with when the dies are nearly worn out, as then the thread cutting takes place well inside the diehead ; the tendency to choke may be minimised by using oil instead of cutting compound.

This trouble is also very much more acute on soft clinging materials such as very mild steel and copper, than on the harder materials, and if the diehead is being used continuously near its maximum size on these soft materials it may be necessary to bore or grind out slightly the front of the diehead to allow more chip clearance.

The maximum amount of boring out each diehead will stand will be found on page 60.

Fig. 65—Showing the excellent form of thread cut with Zonic Lapped Dies. Pitch error was only .0007″ in 9″ of thread.

INSTRUCTIONS FOR DISMANTLING AND RE-ASSEMBLING COVENTRY DIEHEADS.

The following instructions apply particularly to the dismantling and re-assembling of the Standard Dieheads from $\frac{1}{2}''$ to 2″ sizes, but with slight, and in the main, obvious alterations, they can be applied to the $\frac{1}{4}''$ $\frac{5}{16}''$, 3″ and $4\frac{1}{2}''$ standard sizes and the Fine Thread Dieheads.

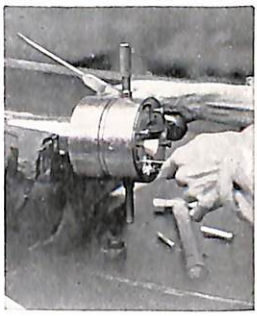
The whole of the dismantling operations can be performed in about 10 to 15 minutes and the re-assembling will take but slightly longer.

All the tools required are a bench vice with soft jaws, two or three screwdrivers, a hammer and several pieces of brass or copper for tapping pins and bushes out.

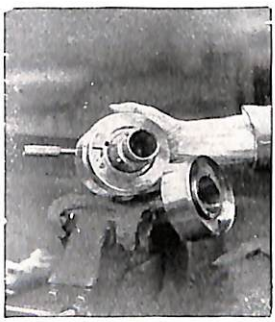
When taking out the various springs it is well to place them with their mating pieces to avoid confusion when re-assembling.

1. Close the diehead. This takes all pressure off the dies.

2. Remove front plate and dies. It is not necessary to remove front plate screws except on $\frac{1}{4}''$ and $\frac{5}{16}''$ sizes.



3. Open diehead. Remove closing spring screws and springs.



4. Slide body out of shank. Condition of detent pin and tooth can now be examined.

5. Remove the two scroll screws which hold the external and internal scrolls together.

6. Lift external scroll off the body. The opening springs can now be examined.

7. Remove two cheese head screws projecting from body and internal scroll can be lifted off.

8. Tap wire pin out of detent handle.

9. Tap detent pin out of handle and bush. Spring will come with it.

The diehead is now dismantled sufficiently for cleaning and for renewing opening springs on body.

10. Tap detent pin bush out of adjusting ring. Use brass or copper rod for this

11. Remove adjusting screw and locknut together.

12. Remove shank.

13. Remove adjusting spring screw from back of adjusting ring support.

14. Adjusting ring can be unscrewed. Two holes for special wrench shown

are provided, but one piece of rod will serve.

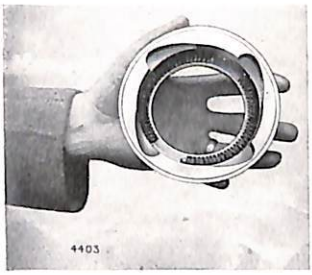
In the latest type of dieheads, the adjusting ring is held in position by a spring "Circlip" ring. This has to be expanded until it will pass over the plain part of the inner boss of the adjusting ring support.

The diehead is now completely dismantled. Each part should be cleaned and any burrs caused by tapping parts out should be removed.

THE TECHNICAL COLLEGE, COVENTRY

RE-ASSEMBLING

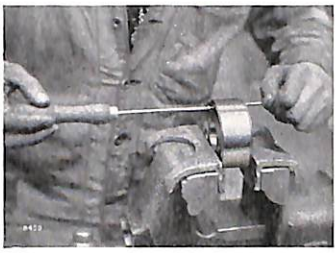
1. Place internal scroll on body with cams against shoulder. Replace the two cheese head opening screws in body just above the internal scroll. See that internal scroll is free to rotate.



2. Place opening springs in recess in external scroll with their forward ends, viewed clockwise as above, against the two opening spring pegs and the rearward ends held by the two side pegs, leaving a gap at the rear of each spring.

The two side pegs are only fitted to the $1\frac{1}{2}$" CH and $2\frac{1}{2}$" and $3\frac{1}{2}$" F.T. dieheads. The $\frac{1}{4}$" and $\frac{5}{16}$" dieheads are drilled to allow wires to be inserted to hold back the springs until the body is in position, then withdrawn.

3. Arrange external scroll and body with internal scroll attached, as shown at right. Drop body into scroll so that opening spring screws (A) fall into gap behind the springs and with scroll screw holes (B) in internal and external scrolls opposite each other. Replace the two scroll screws which unite the external to the internal scroll. Revolve the scrolls by hand against the opening springs to make sure that the parts have been fitted in correct relation to each other.



4. Place adjusting spring in slot at back of adjusting ring and screw this into the shank with the spring side downwards. Continue screwing until tight, then ease back until the large hole is opposite the elongated slot in the shank. This makes sure that adjusting ring is free to rotate.

The latest type of dieheads have the adjusting ring retained in position by a "Circlip" ring. In this type the adjusting ring is put into position and the "Circlip" is then slipped into the groove provided for it.

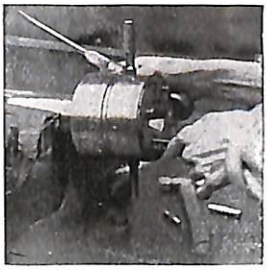
5. Replace detent pin bush in adjusting ring and tap tight home.

6. Unscrew adjusting ring as far as slot in shank allows. Then with two small screwdrivers ease back the adjusting spring coil by coil until end of spring can be held back through hole in adjusting ring.

7. Replace detent pin (with its spring on the shank) in the bush, with the narrow part of the flats shewn at the top and the handle to the right.

8. Replace detent pin handle pointing as shown in illustration 7, arranging the pin holes to coincide. To do this place shank face downwards on bench with a small block of brass under the detent pin. Pin the handle to the detent pin. If the pin holes do not coincide exactly, the handle can be adjusted by holding the other end of detent pin.

9. See that both body and shank are clean, grease the holes in shank with vaseline and slide the previously assembled body into place, with the graduations on body opposite index mark on shank.



10. Fit the closing springs on their screws and replace as shown. Tighten up solid, then ease back both screws equally until the pull-off bumps the detent pin handle against its bush. Replace adjusting screw. Close the diehead.

The diehead is now re-assembled ready for the dies. Always take out and replace the dies with diehead closed.

REPLACE PARTS

(See pages 63 to 75).

Nearly every part of the Coventry Diehead can be replaced from stock, but there are one or two small pieces which are fitted and supplied together. We give below particulars of these :—

The detent pin handle is fitted on to the end of the detent pin and fixed by fitting a peg through the handle and detent pin. When a new detent pin is required, it is necessary to supply also a new handle.

The external scroll has a small hardened tooth fitted at the back of it for the detent pin to work against and it is therefore necessary when an external scroll is ordered to supply it complete with hardened tooth fitted in it.

If a new tooth only is required it is supplied soft so that the hole for the retaining pin can be drilled in position. The engaging portion of the tooth must then be water hardened from 760°C.

When fitting a new internal scroll, it is necessary for customers to locate this in the correct relative position in the external scroll and then drill the locating holes in the internal scroll from the screw holes in the external scroll. The scroll must then be heated to 820°C and quenched in oil and then tempered at 450°C cooling in oil. The scroll may have distorted making it necessary to re-set or press back to circular form in a vice.

CAPACITIES OF COVENTRY DIEHEADS.

Standard C & CH Dieheads

											Fine Thread	
SIZE OF DIEHEAD	$\frac{1}{4}''$	$\frac{5}{16}''$	$\frac{1}{2}''$	$\frac{3}{4}''$	$1''$	$1\frac{1}{4}''$	$1\frac{1}{2}''$	$2''$	$3''$	$4\frac{1}{2}''$	$2\frac{1}{2}''$ **	$3\frac{1}{2}''$
Capacity—Max.	$\frac{1}{4}''$	$\frac{5}{16}''$	$\frac{1}{2}''$	$\frac{3}{4}''$	$1''$	$1\frac{1}{4}''$	$1\frac{1}{2}''$	$2''$	$3''$	$4\frac{1}{2}''$	$2\frac{1}{2}''$	$3\frac{1}{2}''$
,, mm.	6	8	13	20	26	33	38	52	76	114	63	89
,, B.S.P.	—	—	$\frac{1}{4}''$	$\frac{1}{2}''$	$\frac{3}{4}''$	$1''$	$1''$	*$1\frac{3}{4}''$	$2\frac{1}{2}''$	$4''$	$2''$	$3''$
Smallest diameter screwed ..	12BA	10BA	6BA	2BA	OBA	$\frac{1}{4}''$	$\frac{3}{8}''$	$\frac{1}{2}''$	$\frac{3}{4}''$	$1\frac{1}{2}''$	$1\frac{3}{4}''$	$2\frac{1}{2}''$
Minimum B.S.P. screwed ..	—	—	—	—	—	—	—	—	—	—	$1\frac{1}{2}''$	$2\frac{1}{4}''$
Coarsest pitch t.p.i.	—	—	—	—	—	—	—	—	—	—	11	11
Coarsest pitch (pitch in mm.) ..	—	—	—	—	—	—	—	—	—	—	2.25	2.25
Maximum length screwed ..	$1''$	—	—	—	—	—	—	—	—	—	†$2\frac{1}{2}''$	†$2\frac{5}{8}''$
Weight minus dies	10ozs.	1 lb.2oz.	$3\frac{1}{4}$	$8\frac{1}{4}$	12	$18\frac{1}{4}$	23	45	77	160	$22\frac{1}{2}$	$31\frac{1}{2}$

When the diehead body is specially bored out, fine threads can be cut up to the following :— (Type C.H. only)

Diameter	—	$\frac{3}{8}''$	$\frac{11}{16}''$	$1\frac{1}{16}''$	$1\frac{3}{8}''$	$1\frac{11}{16}''$	$2''$	$2\frac{5}{8}''$	$3\frac{1}{2}''$	$5\frac{1}{2}''$	—	—
Diameter, mm.	—	—	17	26	35	42	50	67	89	140	—	—
Length	—	$\frac{11}{16}''$	$\frac{3}{4}''$	$1\frac{1}{8}''$	$1\frac{1}{4}''$	$1\frac{1}{2}''$	$1\frac{5}{8}''$	$1\frac{5}{8}''$	$2''$	$2\frac{5}{8}''$	—	—
Length, mm.	—	—	19	28	32	38	42	42	51	66	—	—
Diameter, B.S.P.	—	—	$\frac{3}{8}''$	$\frac{3}{4}''$	$1''$	$1\frac{1}{4}''$	$1\frac{1}{2}''$	$2\frac{1}{4}''$	$3''$	$5''$	—	—

When the diehead is fitted with special shank smaller than standard the following gives the maximum length that the largest diameter can be screwed.

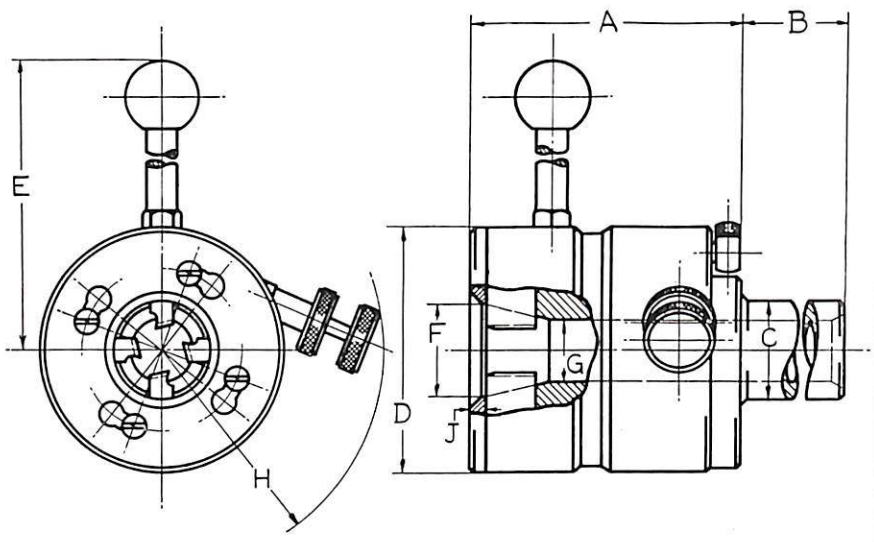
Maximum length	—	$1\frac{1}{4}''$	$2\frac{1}{16}''$	$2\frac{3}{4}''$	$3''$	$3\frac{1}{2}''$	$3\frac{3}{4}''$	$4\frac{3}{8}''$	$5''$	†—	—	—

*The $1\frac{3}{4}''$ British Standard Pipe Thread can be screwed up to $1\frac{5}{8}''$ long only, but the $1\frac{3}{4}''$ Whitworth Gas Thread can be screwed any length.

†The standard shank is secured to the back of the body by a flange. If the shank is removed and a special flanged adaptor fitted in its place, having a hole in it not less than that in the diehead body, the work can pass right through the diehead without the length screwed being limited by it.

**All sizes have four dies per set, with the exception of the $3\frac{1}{2}''$ Fine Thread Diehead, which has six.

DIMENSIONS OF COVENTRY C.H. DIEHEADS

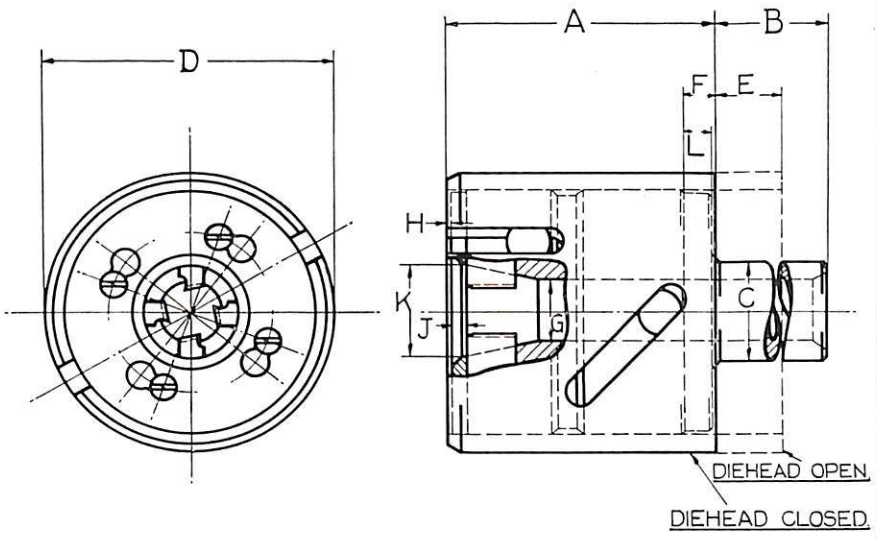


SIZE OF DIEHEAD	A	B	C	D	E	F	G	H	J
1/4 CH.	1 7/16	1 9/16	⊗ 5/8	1 5/8	2 1/8	19/32	3/8 x 1/16 DEEP	—	3/32
5/16 CH.	1 15/16	1 19/32	5/8	1 3/4	2 1/4	5/8	3/8	1 5/8	7/64
1/2 CH.	2 11/16	2 1/32	1	2 1/2	3 3/8	15/16	5/8	2 1/4	5/32
3/4 CH.	3 5/8	2 11/16	1 1/2	3 7/16	4	1 3/8	15/16	3 1/4	3/16
1 CH.	4	3 1/8	1 3/4	4	4 3/4	1 3/4	1 3/16	3 5/16	1/4
1 1/4 CH.	4 7/16	4 1/16	2 1/8	4 5/8	5 1/2	2 1/16	1 7/16	4	1/4
1 1/2 CH.	4 11/16	4 5/16	2 1/2	5 1/16	5 11/16	2 3/8	1 11/16	4 1/4	1/4
2 CH.	5 5/8	4 1/16	3 1/4	6 7/8	7 15/16	3 3/16	2 1/8	5 1/8	5/16
3C	6 7/16	4	5	8 5/8	9	4 3/16	3 1/8	6	5/16
4 1/2 C	9 3/8 OVERALL	FLANGED BASE	5 1/2 DIA * SPIGOT	11 1/2	11 1/8	6	4 3/4	11	3/8
2 1/2 FINE THREAD	4 1/8	3 3/16	1 3/4	5 9/16	5 9/16	3 1/8	2 11/16 x 2 7/8 DEEP	4 1/4	1/4
3 1/2 FINE THREAD	4 1/4	3 15/16	2 1/8	6 7/8	6 11/16	4 1/4	3 11/16 x 3 DEEP	4 7/8	1/4

* THE 4 1/2 DIEHEAD HAS NO SHANK, BUT IS FITTED WITH A FLANGED BASE HAVING FOUR 5/8 CLEARANCE HOLES SPACED 8 1/2 x 5 1/2

⊗ THE 1/4 DIEHEAD HAS A SPRING-HOLDER INCORPORATED IN THE SHANK

DIMENSIONS OF COVENTRY ROTATING DIEHEADS.

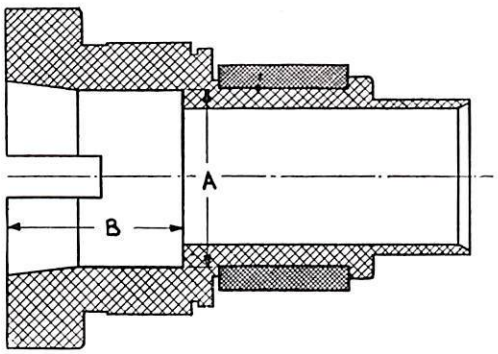


SIZE OF DIEHEAD	A	B	C	D	E	F	G	H	J	K	L
1/4 C.H.	1 5/8	*	*	1 11/16	5/16	9/32	3/8	NIL	1/16	9/16	*
5/16 C.H.	1 15/16	2 1/4	3/4	1 31/32	1/2	3/16	3/8	1/32	7/64	9/16	7/32
1/2 C.H.	2 3/4	2	1	2 7/8	11/16	5/16	5/8	1/32	5/32	29/32	9/32
3/4 C.H.	3 5/8	2 21/32	1 1/2	3 7/8	13/16	13/32	15/16	NIL	3/16	1 1/4	3/8
1 C.H.	3 7/8	3 7/32	1 3/4	4 5/8	1	11/32	1 3/16	NIL	1/4	1 5/8	7/16
1 1/4 C.H.	4 1/2	4 1/16	2 1/8	5 7/32	1 5/16	7/16	1 7/16	1/16	1/4	2	7/16
1 1/2 C.H.	4 27/32	4 5/32	2 1/2	5 7/8	1 11/32	19/32	1 11/16	NIL	1/4	2 1/4	7/16
2 C.H.	5 15/16	4 3/8	3 1/4	7 3/4	1 11/16	15/16	2 1/8	NIL	5/16	3 1/8	5/8
2 1/2 FINE THREAD	4 1/2	2 15/16	1 3/4	6 1/4	1	5/8	2 11/16 x 2 7/8 DP	1/8	1/4	3	3/8
3 1/2 FINE THREAD	4 1/2	3 5/8	2 1/8	7 3/4	1	9/16	3 11/16 x 3 DEEP	3/32	1/4	4 1/8	7/16

* THE 1/4 C.H. COVENTRY ROTATING DIEHEAD IS NOT FITTED WITH STANDARD SHANK, END OF SPINDLE MADE TO SUIT. PARTICULARS ON APPLICATION.

BORED-OUT DIEHEADS

All style C and CH Standard Dieheads except the $\frac{1}{4}''$ size and the $2\frac{1}{2}''$ and $3\frac{1}{2}''$ Fine Thread Dieheads can be bored out to accommodate a diameter larger than nominal capacity, of short length and fine thread. The maximum dimensions we recommend are shown below. It is of course, necessary to grind style CH Dieheads, but we do not recommend this on account of the release of internal stresses due to removal of hardened case. CH diehead bodies should be bored out before case hardening. This is our usual practice on new dieheads supplied with bored-out bodies.



Size of Diehead	A	B	Size of Diehead	A	B
$\frac{5}{16}''$	$\frac{9}{16}''$	$\frac{3}{4}''$	$1\frac{1}{2}''$	$2\frac{3}{16}''$	$2\frac{1}{8}''$
$\frac{1}{2}''$	$\frac{13}{16}''$	$1''$	$2''$	$2\frac{7}{8}''$	$2\frac{1}{4}''$
$\frac{3}{4}''$	$1\frac{3}{16}''$	$1\frac{3}{8}''$	$3''$	$3\frac{3}{4}''$	$2\frac{9}{16}''$
$1''$	$1\frac{9}{16}''$	$1\frac{5}{8}''$	$4\frac{1}{2}''$	$5\frac{3}{4}''$	$3\frac{1}{4}''$
$1\frac{1}{4}''$	$1\frac{7}{8}''$	$1\frac{7}{8}''$			

COVENTRY DIEHEADS ON HERBERT CAPSTAN LATHES.

Machine	Clearance over Turret Slide	Diameter of Turret Hole	Diehead Size and Type	Diameter of Shank		Fitting
				Std.	Spec.	
No. 0 Caps	1 5/16"	3/4"	1/2" C.H.	1"	3/4"	Direct with Special 3/4" dia. Shank.
No. 1, 1S, and 1SO	1 5/16"	1"	1/2" C.H.	1"	—	Direct.
No. 2D & 2S (with 6 1/2" Centres)	2 7/32"	1"	1/2" C.H.	1"	—	Direct, or 1" dia. Boring Bar Holder.
			3/4" C.H.	1 1/2"	1"	Direct with Special 1" Shank, or 1 1/2" Boring Bar Holder.
			1" C.H.	1 3/4"	—	Minus Standard Shank—but with Flanged Adaptor.
			1 1/4" C.H.	2 1/8"	—	
			1 1/2" C.H.	2 1/2"	—	
			2 1/2" F.T.	1 3/4"	—	
No. 2, 2S, 2SC, 2B, and 2D (with 5 1/2" Centres)	1 7/32"	1"	1/2" C.H.	1"	—	Direct, or 1" dia. Boring Bar Holder.
			3/4" C.H.	1 1/2"	1"	Direct with Special 1" Shank, or 1 1/2" Boring Bar Holder.
			1" C.H.	1 3/4"	1 1/4" with Keyway	Hand-operated Elevating Holder.
			1", 1 1/4", 1 1/2" C.H. and 2 1/2" F.T.	Minus Shanks	Plate Adaptor	Cam-operated Elevating Holder.
No. 3, 4, and 4C	2 3/32"	1 1/2"	1/2" C.H.	1"	—	Direct with Bush, or 1 1/2" Boring Bar Holder and Bush.
			3/4" C.H.	1 1/2"	—	Direct, or 1 1/2" Boring Bar Holder.
			1" C.H.	1 3/4"	1 1/2"	Direct with Special 1 1/2" dia. Shank or Std. Shank & 1 3/4" Boring Bar Holder.
			1 1/4" 1 1/2" C.H. 2 1/2" F.T.	—	2 1/8" with Keyway	Hand-operated Elevating Holder.
			1 1/4", 1 1/2" C.H. 2 1/2" F.T.	Minus Shanks	Plate Adaptors	Cam-operated Elevating Holder.
No. 4 SEN & No. 4 SE (with 7 3/8" Centres)	3 1/32"	1 1/2"	1/2" C.H.	1"	—	Direct with Bush, or 1 1/2" Boring Bar Holder and Bush.
			3/4" C.H.	1 1/2"	—	Direct, or Minus Std., Shank but Flanged Adaptor.
			1" C.H.	1 3/4"	—	Minus Standard Shank, but with Flanged Adaptor.
			1 1/4" C.H.	2 1/8"	—	
			1 1/2" C.H.	2 1/2"	—	
			2 1/2" F.T.	1 3/4"	—	
No. 4 SEN. and No. 5A, 5B and 5E (with 7 3/8" Centres)	2 13/32"	1 1/2"	1/2" C.H.	1"	—	Direct with Bush or 1 1/2" Boring Bar Holder and Bush.
			3/4" C.H.	1 1/2"	—	Direct or 1 1/2" Boring Bar Holder or Minus Std. Shank but with Flanged Adaptor.
			1" C.H.	1 3/4"	1 1/2"	Direct with Special 1 1/2" dia. Shank or Minus Std. Shank but with Flanged Adaptor.
			1 1/4" C.H.	2 1/8"	1 1/2"	Direct with Spec. 1 1/2" dia. Shank or Minus Std. Shank but with Flanged Adaptor.
			1 1/2" C.H. & 2 1/2" F.T.	—	2 1/4" with Keyway	Hand-operated Elevating Holder.
			1 1/2" C.H. & 2 1/2" F.T.	Minus Shanks	Plate Adaptor	Cam-operated Elevating Holder.

COVENTRY DIEHEADS ON HERBERT HEXAGON TURRET LATHES

Machine and Capacity	Diameter of turret Hole	Diehead Size and Type	Diameter of Shank	Fitting
Nos. 1 & 5 1 5/8" × 27"	2 1/8"	1" C.H.	1 3/4"	Bush
		1 1/4" C.H.	2 1/8"	Direct
		1 1/2" C.H.	2 1/2"	Boring Bar Holder
No. 11 2" × 30"	2 1/8"	1" C.H.	1 3/4"	Bush
		1 1/4" C.H.	2 1/8"	Direct
		1 1/2" C.H.	2 1/2"	Boring Bar Holder
		2 1/2 F.T.	1 3/4"	Bush
No. 13 2 3/4" × 36"	3 1/4"	1 1/4" C.H.	2 1/8"	Bush
		1 1/2" C.H.	2 1/2"	Bush
		2" C.H.	3 1/4"	Direct
		2 1/2 F.T.	1 3/4"	Bush
No. 4 3 1/2" × 42"	3 1/4"	2" C.H.	3 1/4"	Direct
		3" C.	5"	Boring Bar Holder
		2 1/2 F.T.	1 3/4"	Bush
		3 1/2 F.T.	2 1/8"	Bush
No. 19 3 1/2" × 42"	4"	2" C.H.	3 1/4"	Bush
		3" C.	5"	Boring Bar Holder
		2 1/2 F.T.	1 3/4"	Bush
		3 1/2 F.T.	2 1/8"	Bush

FITTING COVENTRY DIEHEADS

TO HERBERT COMBINATION TURRET LATHES

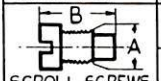
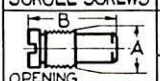
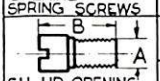
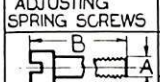
Machine	Diameter of Turret Hole	Diehead Size and Type	Diameter of Shank	Fitting
No. 3	3¼″	1¼″ C.H.	2⅛″	Holder or Bush
No. 6 & Universal	2⅛″	1¼″ C.H.	2⅛″	Holder or Direct
No. 7	3¼″	1¼″ C.H.	2⅛″	Holder or Bush
No. 7 Junior	2⅛″	1½″ C.H.	2½″	Holder
No. 7 Universal	3¼″	1½″ C.H.	2½″	Holder or Bush
No. 7A & Universal	2⅛″	1½″ C.H.	2⅛″	Holder or Direct
No. 8	3¼″	2″ C.H.	3¼″	Holder or Direct
No. 9 & Universal	3¼″	2″ C.H.	3¼″	Holder or Direct
No. 9A	3¼″	2″ C.H.	3¼″	Holder or Direct
No. 9B	3 5/16″(Rough Bore)	2″ C.H.	3¼″	Holder
No. 10	3¼″	2″ C.H.	3¼″	Holder or Direct
No. 12	4 13/16″	2″ C.H.	3¼″	Holder or Bush
No. 15	3¼″	1¼″ C.H.	2⅛″	Holder or Bush
No. 16	3¼″	2″ C.H.	3¼″	Holder or Direct
No. 17	3¼″	3″ C.	5″	Flanged Holder
No. 20	4¾″	3″ C.	5″	Holder
No. 20	4¾″	4½″ C.	Flanged Base with 5½″ dia. spigot	Direct
No. 21	4¾″	3″ C.	5″	Holder
No. 21	4¾″	4½″ C.	Flanged Base with 5½″ dia. spigot	Direct
No. 22	5 1/16″	3″ C.	5″	Holder

COVENTRY DIEHEADS FOR MULTI-SPINDLE AUTOMATICS.

Size of Diehead	Machine on which used	Number of Spindles
½″ C.H.	9/16″, ¾″ & ⅞″ Types F & G Gridley Autos	4
½″ C.H. & ¾″ C.H.	1¼″ Types F & G Gridley Autos	4
½″ C.H., ¾″ C.H. & 1 C.H.	1¾″ Types F & G Gridley Autos	4
1 C.H., 1¼″ C.H. & 1½″ C.H.	2¼″ Types F & G. Gridley Autos	4
½″ C.H.	No. 60 New Britain Auto	6
1″C.H.,1¼″C.H.,1½″C.H.&2½F.T.	No. 61 & 65 New Britain Autos	6
½″C.H., ¾″ C.H. & 1″ C.H.	No. 12A New Britain Auto	3
1″C.H.,1¼″C.H.,1½″C.H.&2½F.T.	No. 23A New Britain Auto	4
½″ C.H.	⅞″, 1″ & 1⅛″ B.S.A. Gridley Autos	4
¾″ C.H.	1⅜″ & 1⅝″ B.S.A. Gridley Autos	4
1¼″ C.H.	2″ & 2¼″ B.S.A. Gridley Autos	4
½″ C.H.	9/16″Styles R.& R.A. Acme-Gridley Autos	6
½″ C.H.	1″ Style R.A.6. Acme-Gridley Auto	6
½″ C.H. & ¾″ C.H.	1″ Style R.6 Acme-Gridley Auto	6
½″ C.H. & ¾″ C.H.	1¼″ Style R.A.6 Acme-Gridley Auto	6
½″ C.H. & ¾″ C.H.	1⅝″ Style R.6 Acme-Gridley Auto	6
¾″ C.H. & 1 C.H.″	1⅝″ Style R.A.6 Acme-Gridley Auto	6
¾″ C.H., 1″ C.H. & 1¼″ C.H.	2″ Style R.A.6 Acme-Gridley Auto	6
1″ C.H. & 1¼″ C.H.	2¼″ Style R.6 Acme-Gridley Auto	6
1″ C.H. & 1¼″ C.H.	2⅝″ Style R.6 Acme-Gridley Auto	6

SCREWS & SPRINGS

FINE THREADS

SIZE OF DIEHEAD		1/4	5/16	1/2	3/4	1	1 1/4	1 1/2	2	3	4 1/2	2 1/2	3 1/2
 SCROLL SCREWS	A	·097	·116	·155	·175	·242	·242	·242	5/16	5/16	11/32	·175	·242
	B	17/64	17/64	11/32	13/32	1/2	21/32	21/32	7/8	7/8	1 1/16	13/32	1/2
 OPENING SPRING SCREWS	A	·116	·155	PLAIN PINS 15/32 LONG 3/16 DIA × 32 LONG	·242	13/32	13/32	13/32	7/16	1/2	1/2	·242	5/16
	B	17/64	23/64		5/8	11/16	7/8	31/32	15/16	1 1/8	1 1/4	1 5/32	29/32
 CH HD OPENING SPRING SCREWS	A	·097	·116	·155	·242	·242	5/16	5/16	5/16	13/32	1/2	·242	·242
	B	9/32	21/64	11/32	17/32	19/32	13/16	13/16	13/16	1 1/8	1 3/16	17/32	19/32
ADJUSTING SPRING SCREWS	A	—	·116	·175	·242	·242	13/32	13/32	13/32	1/2	1/2	·242	·242
	B	—	15/32	23/32	7/8	7/8	1	1	1 1/4	1 5/8	1 7/8	27/32	15/16
 CLOSING SPRING SCREWS	A	—	·116	·116	·136	·175	·175	·175	·242	5/16	11/32	·136	·175
	B	—	1 1/8	1 3/8	1 13/16	2 1/4	3	2 3/4	3 3/8	3 3/4	4 17/32	2 1/8	2 1/4
FRONT PLATE SCREWS	A	·116	·155	·155	·175	·242	·242	·242	5/16	5/16	7/16	·242	·242
	B	19/64	27/64	37/64	13/16	15/16	15/16	15/16	1 11/32	1 11/32	1 7/16	15/16	15/16
⊗ CLOSING SPRING SCREWS	A	—	·116	·116	·136	·175	·175	—	—	—	—	—	—
	B	—	31/32	1 5/32	1 9/16	1 7/8	2 9/16	—	—	—	—	—	—
⊗ FRONT PLATE SCREWS	A	—	·155	·155	·175	·242	·242	—	—	—	—	—	—
	B	—	23/64	13/32	5/8	5/8	11/16	—	—	—	—	—	—

SIZE OF DIEHEAD	DETENT PIN SPRINGS		CLOSING SPRINGS		ADJUSTING SPRINGS		OPENING SPRINGS	
	LENGTH	TO GO INTO	LENGTH	TO GO INTO	LENGTH	TO GO INTO	LENGTH	TO GO INTO
* 1/4	3/8	3/32	13/16	1/4	—	—	1 13/16	5/32
5/16	3/8	1/8	1	3/16	15/16	1/8	1 15/16	5/32
1/2	7/8	7/32	1 1/8	3/16	1 1/2	7/32	2 5/8	1/4
3/4	1	5/16	1 1/4	1/4	2	1/4	3 1/2	11/32
1	1	11/32	1 9/16	5/16	2 1/4	9/32	4 1/4	25/64
1 1/4	1	7/16	1 5/8	5/16	3	5/16	4 3/4	15/32
1 1/2	1	7/16	1 5/8	5/16	3 3/8	5/16	5	15/32
2	1 3/8	1/2	3 1/2	3/8	3	13/32	7 1/2	1/2
+ 3	‡ 1	‡ 7/8	3 1/2	1/2	4 1/2	1/2	9 1/2	17/32
+ 4 1/2	‡ 1	‡ 7/16	4 1/8	9/16	7	1/2	13 1/4	21/32
FINE THREADS 2 1/2	1	5/16	1 1/4	1/4	2 3/8	1/4	3 3/8	11/32
FINE THREADS 3 1/2	1	11/32	1	5/16	2 7/8	9/32	4	3/8

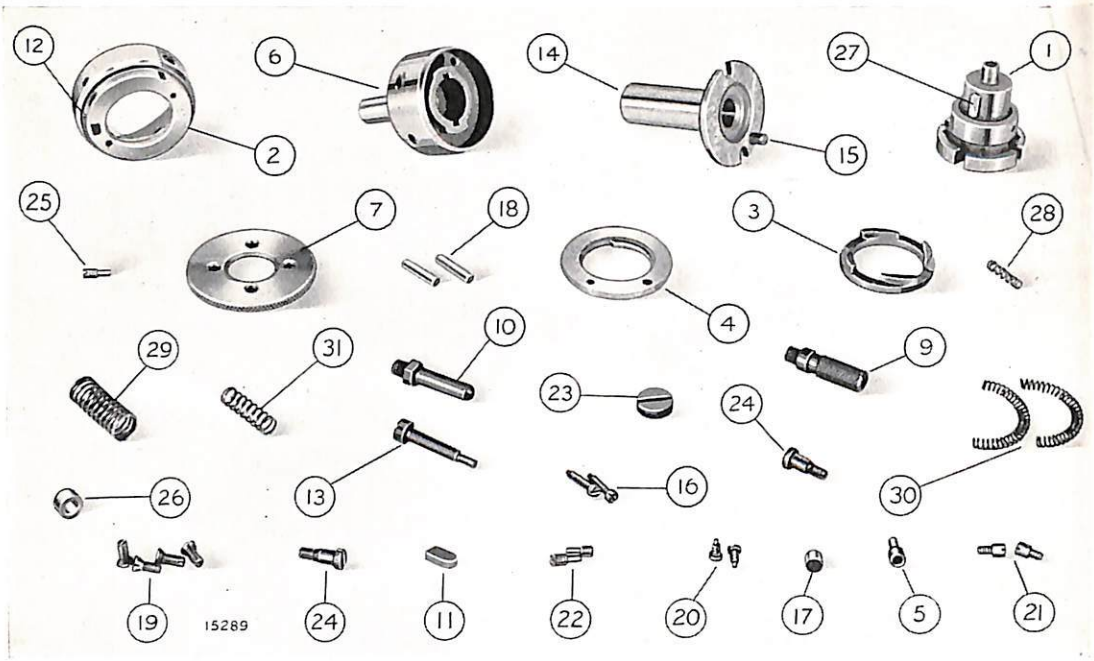
* THE 1/4 DIEHEAD HAS A SPRING HOLDER SPRING 15/16 LONG TO GO INTO 3/8

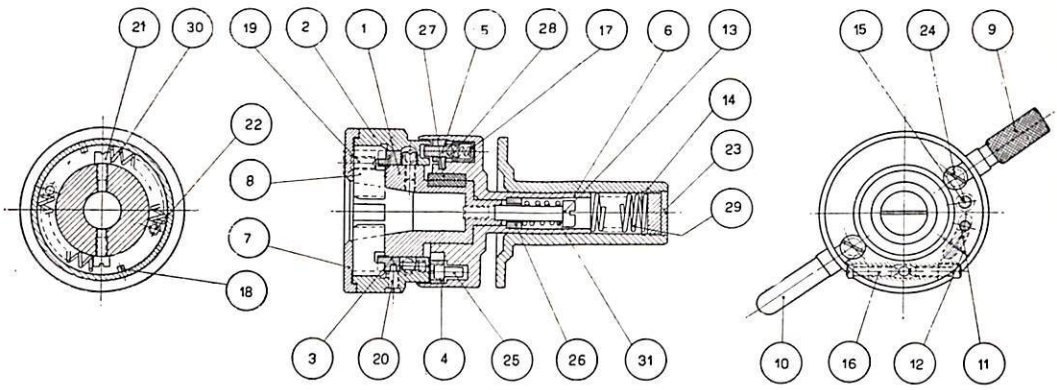
\+ THE 3" & 4 1/2" DIEHEADS EACH HAVE IN ADDITION AN ECCENTRIC OPENING PIN SPRING 7/8 × 1" & 27/32 × 2 LONG RESPECTIVELY

‡ THESE ARE ENGAGING PIN SPRINGS

⊗ FOR C H P DIEHEADS ONLY

* SPARE PARTS FOR 1/4" COVENTRY DIEHEAD STYLE C.H.

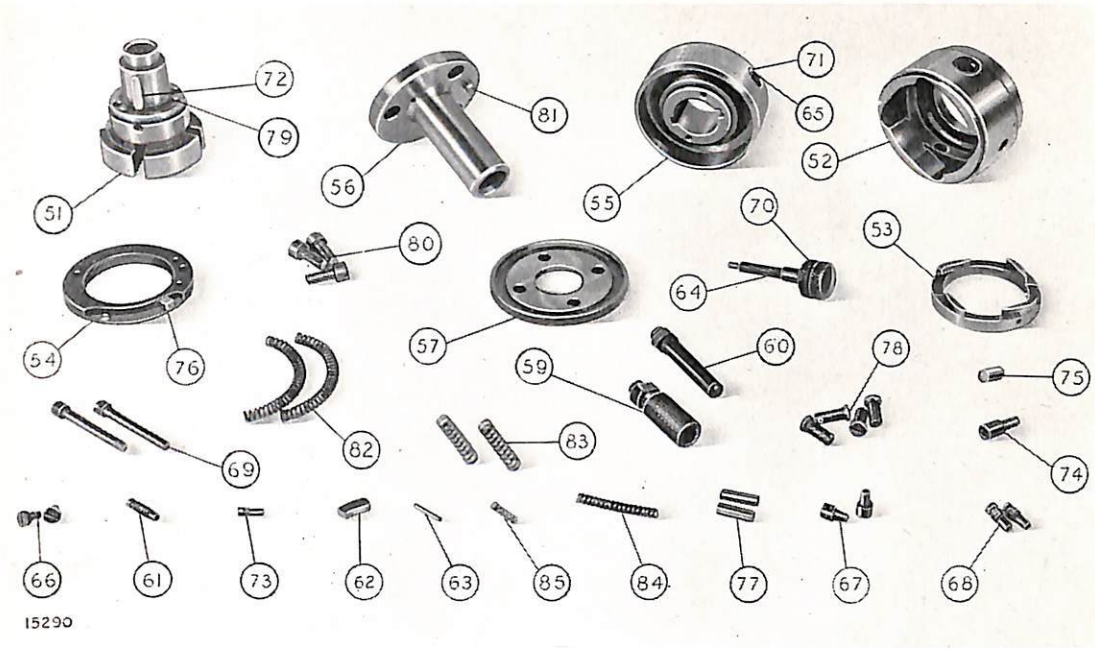


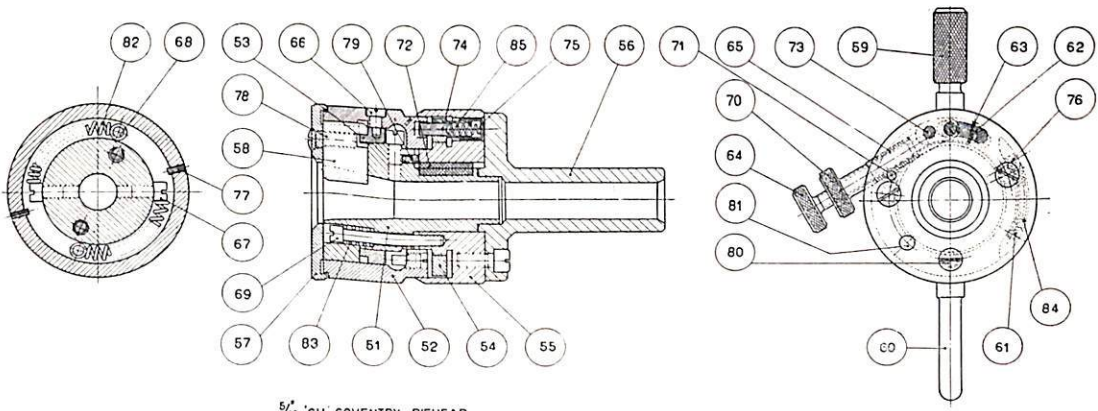


1/4" CH. COVENTRY DIEHEAD

PART Nº	Nº FOR EACH D/H	NAME OF PART	PART Nº	Nº FOR EACH D/H	NAME OF PART	PART Nº	Nº FOR EACH D/H	NAME OF PART
1.	1.	BODY.	17.	1	DETENT PIN CAP	33.		
2.	1.	EXTERNAL SCROLL.	18.	2	STOP PINS (OPENING SPRING)	34.		
3.	1.	INTERNAL SCROLL.	19.	4	FRONT PLATE SCREWS.	35.		
4.	1.	ADJUSTING RING	20.	2	SCROLL SCREWS.	36.		
5.	1.	DETENT PIN.	21.	2.	CH. HD. OPENING SPRING SCREWS.	37.		
6.	1.	SHANK.	22.	2.	OPENING SPRING SCREWS.	38.		
7.	1.	FRONT PLATE.	23.	1	SCREWED PLUG.	39.		
8.	4.	DIES.	24.	2.	SCREWS. (SHANK)	10.		
9.	1.	CLOSING HANDLE.	25.	1	SCREW (ADJUSTING RING)	41.		
10.	1.	AUTO DIE CLOSER.	26.	1.	WASHER	42.		
11.	1.	TOOTH.	27.	2.	KEYS.	43.		
12.	1.	PIN. (TOOTH)	28.	1	SPRING FOR DETENT PIN	44.		
13.	1.	SCREW (BODY)	29.	1.	SPRING FOR SHANK.	45.		
14.	1.	SLEEVE.	30.	2.	OPENING SPRINGS.	46.		
15.	1.	PLUG. (SLEEVE)	31.	1.	CLOSING SPRING	47.		
16.	2.	ADJUSTING SCREWS.	32.			48.		

**When ordering replace parts please state size of diehead.*

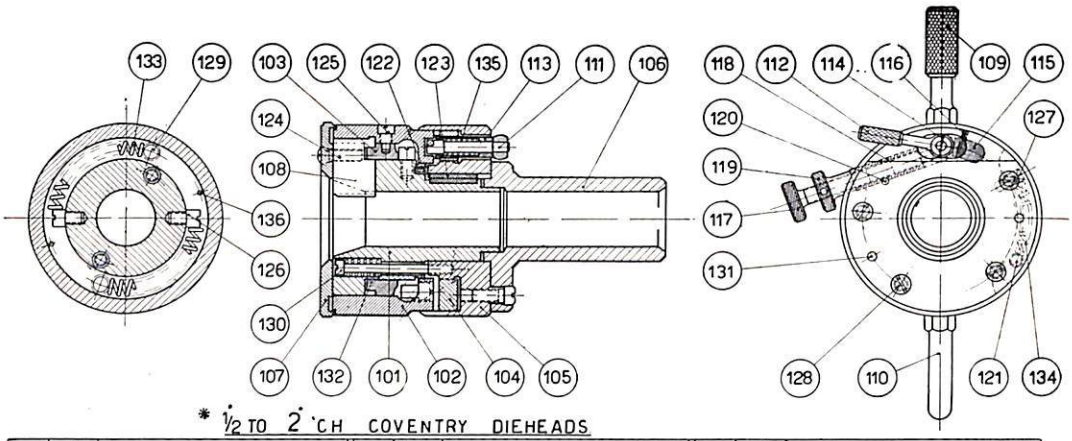




5/16" CH COVENTRY DIEHEAD

PART Nº	Nº FOR EACH D/H	NAME OF PART.	PART Nº	Nº FOR EACH D/H	NAME OF PART.	PART Nº	Nº FOR EACH D/H	NAME OF PART.
51	1	BODY	66	2	SCROLL SCREWS	81	1	TAPER PIN
52	1	EXTERNAL SCROLL	67	2	CH HD OPENING SPRING SCREWS	82	2	OPENING SPRINGS
53	1	INTERNAL SCROLL	68	2	OPENING SPRING SCREWS	83	2	CLOSING SPRINGS
54	1	ADJUSTING RING	69	2	CLOSING SPRING SCREWS	84	1	ADJUSTING SPRING
55	1	ADJUSTING RING SUPPORT	70	1	LOCKNUT	85	1	SPRING FOR DETENT PIN
56	1	SHANK	71	1	PIN (ADJUSTING SCREW BUSH)	86		
57	1	FRONT PLATE	72	2	KEYS (BODY)	87		
58	4	DIES	73	1	PIN (ADJUSTING RING)	88		
59	1	CLOSING HANDLE	74	1	DETENT PIN	89		
60	1	AUTO DIE CLOSER	75	1	DETENT PIN CAP	90		
61	1	ADJUSTING SPRING SCREW	76	1	ADJUSTING SPRING PEG	91		
62	1	TOOTH	77	2	STOP PINS (OPENING SPRING)	92		
63	1	PIN (TOOTH)	78	4	FRONT PLATE SCREWS	93		
64	1	ADJUSTING SCREW	79	3	PINS (BODY)	94		
65	1	ADJUSTING SCREW BUSH	80	3	SCREWS (SHANK)	95		

When ordering replace parts please state size of diehead.

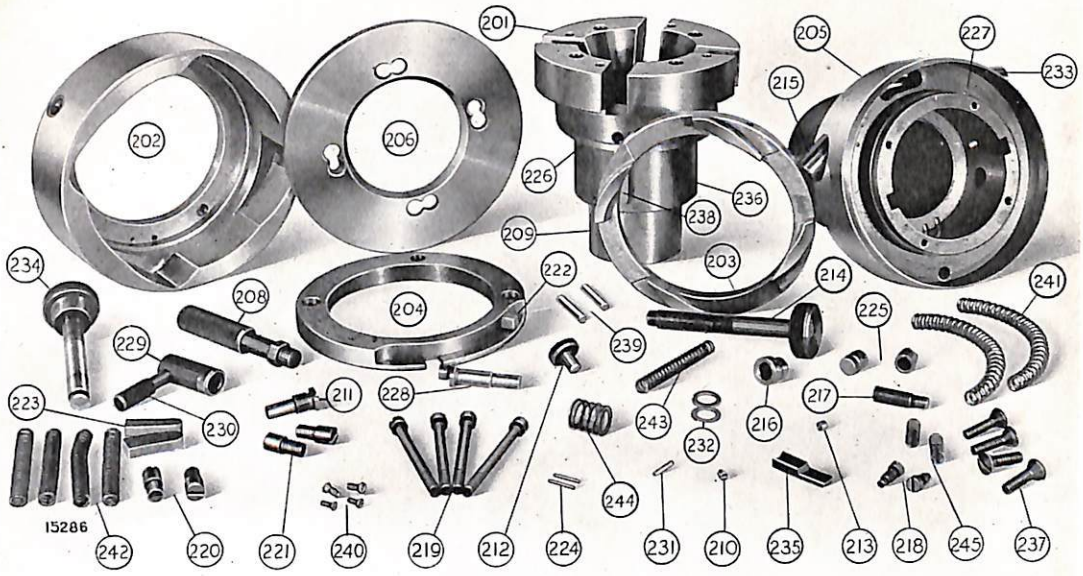


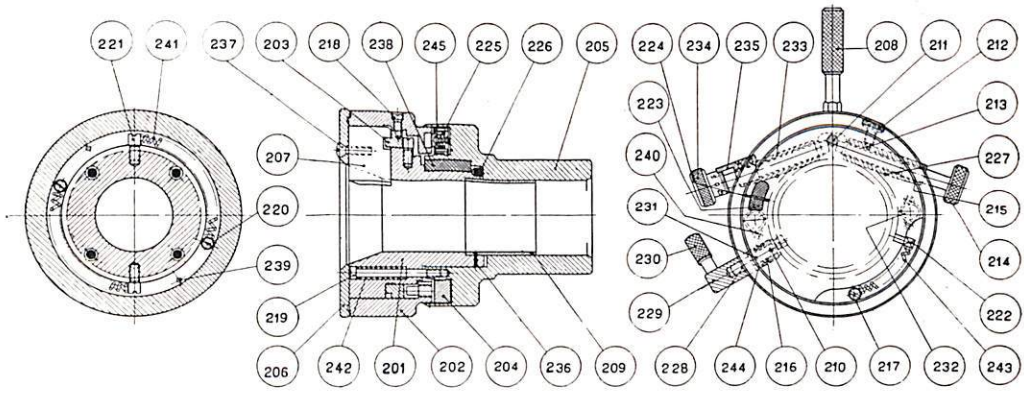
* ½ TO 2" C.H. COVENTRY DIEHEADS

PART N°	N° FOR EACH D/H	NAME OF PART	PART N°	N° FOR EACH D/H	NAME OF PART	PART N°	N° FOR EACH D/H	NAME OF PART
101	1	BODY	117	1	ADJUSTING SCREW	131	2	TAPER PINS
102	1	EXTERNAL SCROLL	118	1	ADJUSTING SCREW BUSH	"	1	" " (½ D/H)
103	1	INTERNAL SCROLL	119	1	LOCKNUT	132	2	CLOSING SPRINGS
104	1	ADJUSTING RING	120	1	PIN (ADJUSTING SCREW BUSH)	"	4	" " (2" D/H)
105	1	ADJUSTING RING SUPPORT	121	1	ADJUSTING SPRING SCREW	133	2	OPENING SPRINGS
106	1	SHANK	122	3	PINS (BODY)	134	1	ADJUSTING SPRING
107	1	FRONT PLATE	123	2	KEYS (BODY)	135	1	DETENT PIN SPRING
108	4	DIES	124	4	FRONT PLATE SCREWS	136	2	STOP PINS
109	1	CLOSING HANDLE	125	2	SCROLL SCREWS	137		
110	1	AUTO DIE CLOSER	126	2	CH HD OPENING SPRING SCREWS	138		
111	1	DETENT PIN	127	1	ADJUSTING SPRING PEG	139		
112	1	DETENT PIN HANDLE	128	4	SHANK SCREWS	140		
113	1	DETENT PIN BUSH	"	3	" " (½ D/H)	141		
114	1	PIN (DETENT PIN HANDLE)	129	2	OPENING SPRING SCREWS	142		
115	1	TOOTH	130	2	CLOSING SPRING SCREWS	143		
116	1	*PIN (TOOTH)	"	4	" " " (2" D/H)	144		

**When ordering replace parts please state size of diehead.*

Part No. 129—For ½" diehead these are straight pins $\frac{3}{16}$" × $\frac{15}{32}$" long.



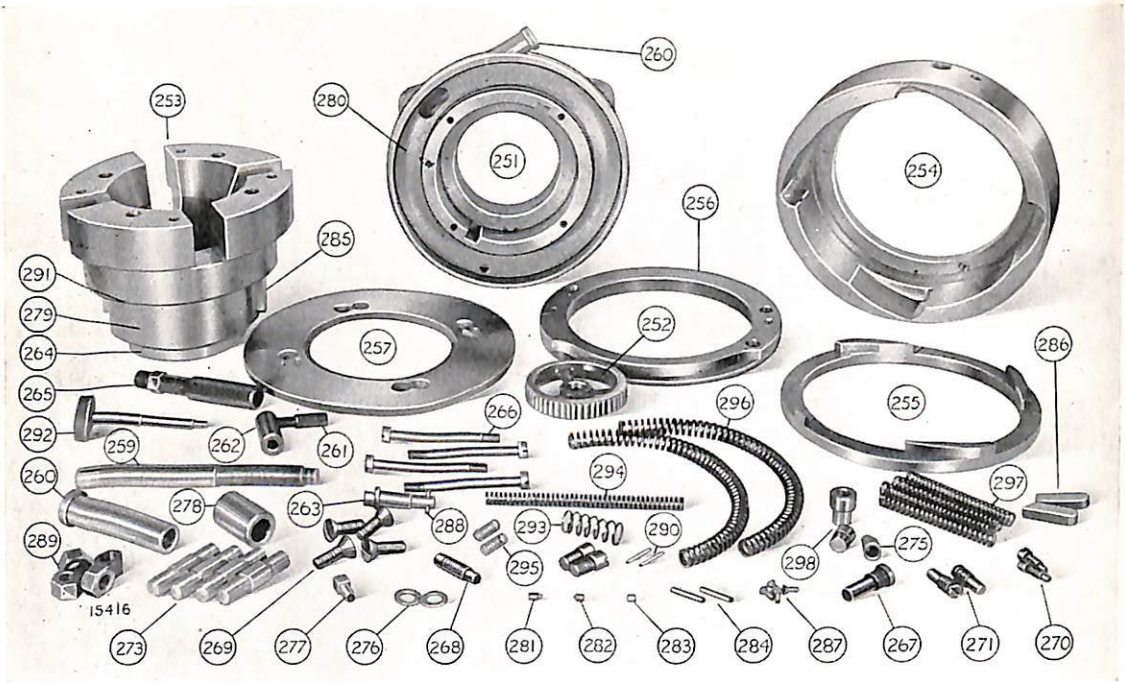


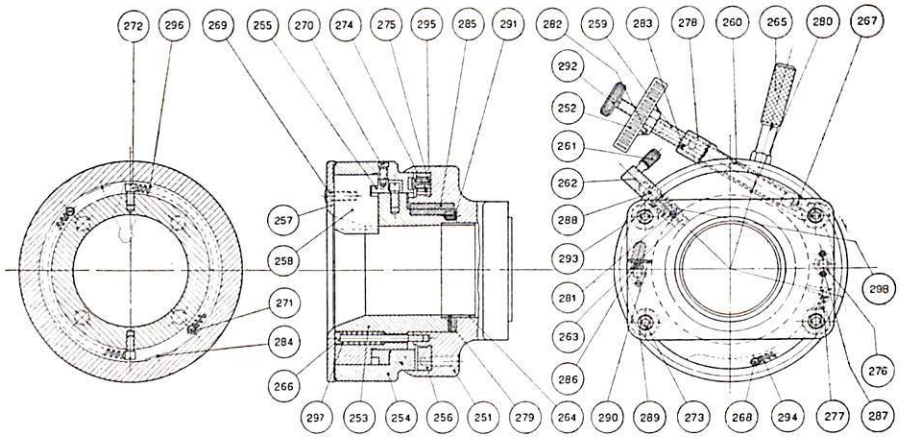
3" C COVENTRY DIEHEAD

PART Nº	Nº FOR EACH D/H	NAME OF PART	PART Nº	Nº FOR EACH D/H	NAME OF PART	PART Nº	Nº FOR EACH D/H	NAME OF PART
201	1	BODY	217	1	ADJUSTING SPRING SCREW	233	1	ADJUSTING SCREW BUSH
202	1	EXTERNAL SCROLL	218	2	SCROLL SCREWS	234	1	ADJUSTING SCREW
203	1	INTERNAL SCROLL	219	4	CLOSING SPRING SCREWS	235	1	INDICATOR FOR REF. 233
204	1	ADJUSTING RING	220	2	OPENING SPRING SCREWS	236	1	PIN (BUSH)
205	1	SHANK	221	2	CH HD. OPENING SPRING SCREWS	237	4	FRONT PLATE SCREWS
206	1	FRONT PLATE	222	1	ADJUSTING SPRING PEG	238	2	KEYS
207	4	DIES	223	2	TEETH	239	2	STOP PINS
208	1	CLOSING HANDLE	224	2	PINS (TEETH)	240	4	CONE HEAD SCREWS
209	1	BUSH	225	2	ENGAGING PINS	241	2	OPENING SPRINGS
210	1	SCREW	226	3	PINS (BODY)	242	4	CLOSING SPRINGS
211	1	SCREW PIN (ADJUSTING RING)	227	2	PINS (ADJUSTING SCREW BUSHES)	243	1	ADJUSTING SPRING
212	1	LOCKING SCREW	228	1	ECCENTRIC OPENING PIN	244	1	ECCENTRIC PIN SPRING
213	1	PAD	229	1	STOCK (OPENING HANDLE)	245	2	ENGAGING PIN SPRING
214	1	ADJUSTING SCREW	230	1	OPENING HANDLE	246		
215	1	ADJUSTING SCREW BUSH	231	1	TAPER PIN	247		
216	1	OPENING PIN BUSH	232	2	WASHERS	248		

When ordering replace parts please state size of diehead.

*SPARE PARTS FOR 4½" COVENTRY DIEHEAD STYLE C.



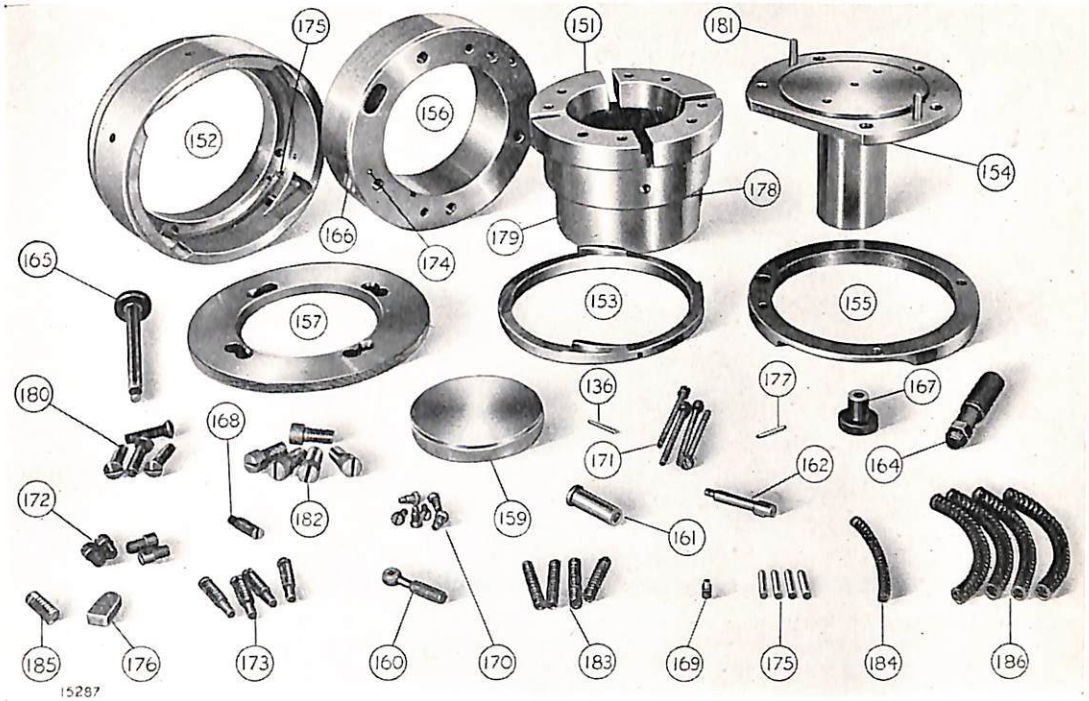


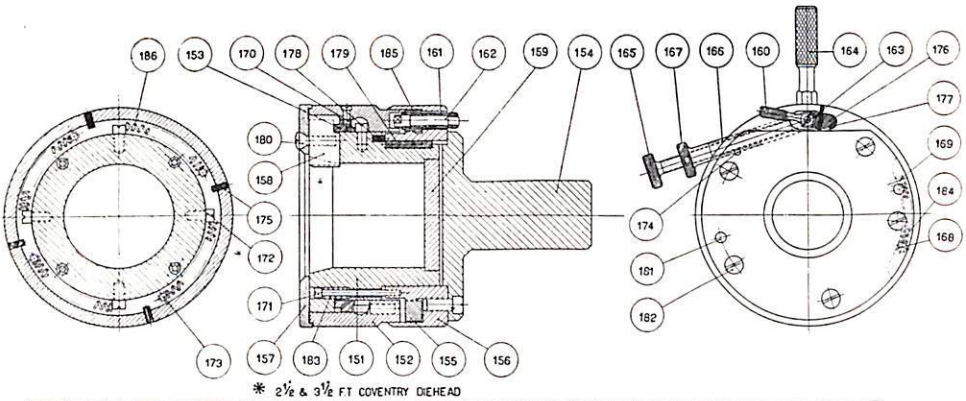
4½" 'C' COVENTRY DIEHEAD

PART Nº	Nº FOR EACH D/H	NAME OF PART	PART Nº	Nº FOR EACH D/H	NAME OF PART	PART Nº	Nº FOR EACH D/H	NAME OF PART.
251	1	BASE	269	4	FRONT PLATE SCREWS	287	4	CONE HEAD SCREWS (ADJUSTING RING)
252	1	HANDWHEEL	270	2	SCROLL SCREWS	288	1	TAPER PIN
253	1	BODY	271	2	OPENING SPRING SCREWS	289	4	HEXAGON NUTS
254	1	EXTERNAL SCROLL	272	2	CH HD OPENING SPRING SCREWS	290	2	PINS (TEETH)
255	1	INTERNAL SCROLL	273	4	STUDS	291	3	STOP PINS (BODY)
256	1	ADJUSTING RING	274	2	PINS (ENGAGING PINS)	292	1	CLAMP SCREW
257	1	FRONT PLATE	275	2	ENGAGING PINS	293	1	SPRING (OPENING HANDLE)
258	4	DIES	276	2	WASHERS	294	1	ADJUSTING SPRING
259	1	ADJUSTING SCREW	277	1	ADJUSTING SPRING PEG	295	2	SPRINGS (ENGAGING PIN)
260	1	ADJUSTING SCREW BUSH	278	1	ADJUSTABLE STOP	296	2	OPENING SPRINGS
261	1	OPENING HANDLE	279	1	PEG (BUSH)	297	4	CLOSING SPRINGS
262	1	STOCK (OPENING HANDLE)	280	1	PEG (ADJUSTING SCREW BUSH)	298	1	ECCENTRIC OPENING PIN BUSH
263	1	ECCENTRIC OPENING PIN	281	1	SCREW (BUSH)	299		
264	1	BUSH (BODY)	282	1	GRUB SCREW	300		
265	1	CLOSING HANDLE	283	1	PAD	301		
266	4	CLOSING SPRING SCREWS	284	2	STOP PINS (OPENING SPRING)	302		
267	1	SCREW PIN	285	2	KEYS	303		
268	1	ADJUSTING SPRING SCREW	286	2	TEETH	304		

When ordering replace parts please state size of diehead.

STYLE C.





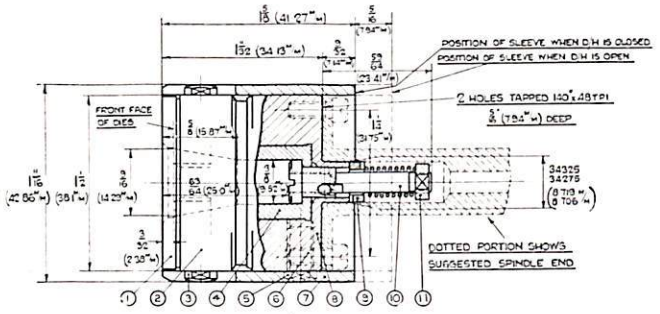
* 2½ & 3½ F.T. COVENTRY DIEHEAD

PART N°	N° FOR EACH D/H	NAME OF PART	PART N°	N° FOR EACH D/H	NAME OF PART	PART N°	N° FOR EACH D/H	NAME OF PART
151	1	BODY	165	1	ADJUSTING SCREW	180	4	FRONT PLATE SCREWS (2½ F.T.)
152	1	EXTERNAL SCROLL	166	1	ADJUSTING SCREW BUSH		6	" " " (3½ F.T.)
153	1	INTERNAL SCROLL	167	1	LOCKNUT	181	2	TAPER PINS
154	1	SHANK	168	1	ADJUSTING SPRING SCREW	182	5	SHANK SCREWS
155	1	ADJUSTING RING	169	1	ADJUSTING SPRING PEG	183	4	CLOSING SPRINGS
156	1	ADJUSTING RING SUPPORT	170	6	SCROLL SCREWS	184	1	ADJUSTING SPRING
157	1	FRONT PLATE	171	4	CLOSING SPRING SCREWS	185	1	DETENT PIN SPRING
158	4	DIES (2½ F.T. D.H)	172	4	CH. HD. OPENING SPRING SCREWS	186	4	OPENING SPRINGS
"	6	" (3½ F.T. D.H)	173	4	OPENING SPRING SCREWS	187		
159	1	PLUG	174	1	PIN (ADJUSTING SCREW BUSH)	188		
160	1	DETENT PIN HANDLE	175	4	STOP PINS (OPENING SPRING)	189		
161	1	DETENT PIN BUSH	176	1	TOOTH	190		
162	1	DETENT PIN	177	1	PIN (TOOTH)	191		
163	1	PIN (DETENT PIN HANDLE)	178	3	PINS (BODY)	192		
164	1	CLOSING HANDLE	179	2	KEYS	193		

**When ordering replace parts please state size of diehead.*

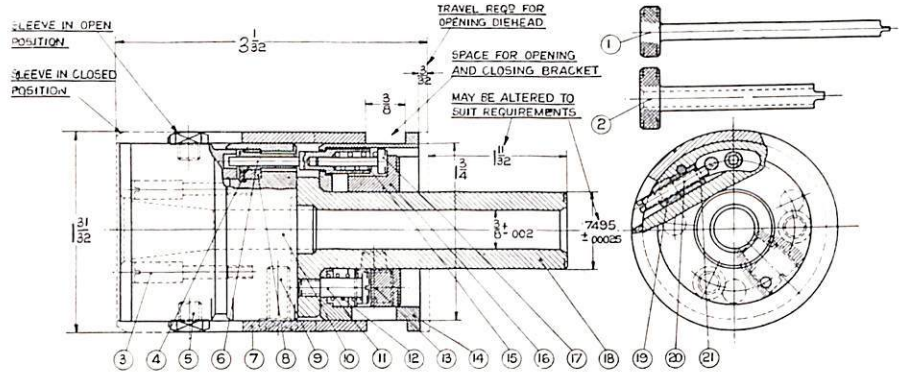
SPARE PARTS FOR COVENTRY ROTATING DIEHEADS

Special parts additional to those for Coventry Standard Dieheads shown on pages 64 to 69. When ordering state size of diehead and reference number of part.


POSITION OF SLEEVE WHEN D.H. IS CLOSED
POSITION OF SLEEVE WHEN D.H. IS OPEN
2 HOLES TAPPED 1/50" 48 T.P.I.
FRONT FACE OF DIES
DOTTED PORTION SHOWS SUGGESTED SPINDLE END

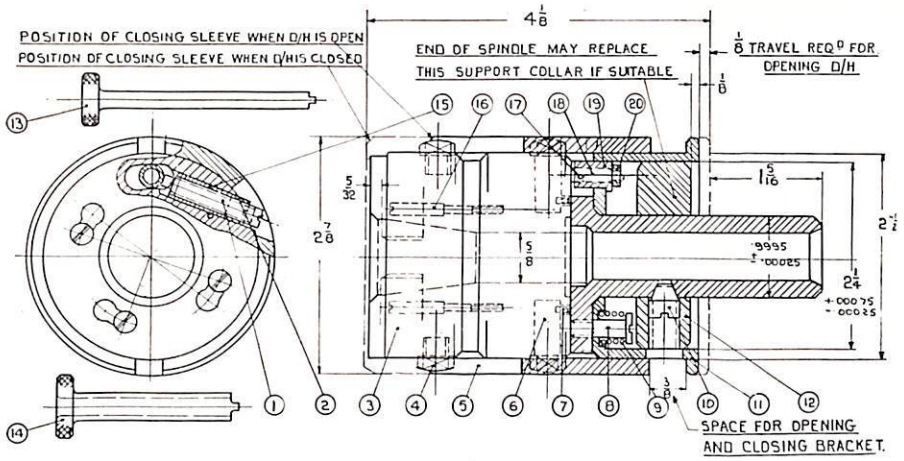
1/4" C.H. Coventry Rotating Diehead arranged for oil feed through spindle.

1. Front Plate.
2. External scroll.
3. Two pins (in shank).
4. Body.
5. Two pins (in shank).
6. Two shank screws.
7. Closing sleeve.
8. Shank.
9. Washer.
10. Screw for body.
11. Nut.


SLEEVE IN OPEN POSITION
SLEEVE IN CLOSED POSITION
TRAVEL REQD FOR OPENING DIEHEAD
SPACE FOR OPENING AND CLOSING BRACKET
MAY BE ALTERED TO SUIT REQUIREMENTS

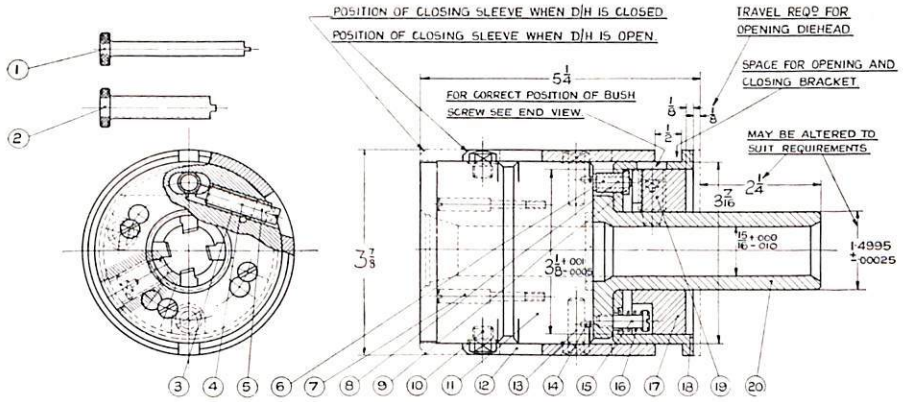
5/16" C.H. Coventry Rotating Diehead with detent pin withdrawing sleeve.

1. Adjusting screw screwdriver.
2. Adjusting screw slot key.
3. Screws to replace closing springs.
4. Detent pin bush.
5. Pins (external scroll).
6. Detent pin.
7. Closing sleeve.
8. Adjusting ring.
9. Pins (adjusting ring support).
10. Adjusting ring support.
11. Spring screws.
12. Springs.
13. Bush screw.
14. Detent pin withdrawing sleeve.
15. Detent pin spring.
16. Support bush.
17. Plunger.
18. Shank.
19. Adjusting screw locknut.
20. Adjusting screw.
21. Adjusting screw bush.


POSITION OF CLOSING SLEEVE WHEN D/H IS OPEN
POSITION OF CLOSING SLEEVE WHEN D/H IS CLOSED
END OF SPINDLE MAY REPLACE THIS SUPPORT COLLAR IF SUITABLE
TRAVEL REQ'D FOR OPENING D/H
SPACE FOR OPENING AND CLOSING BRACKET.

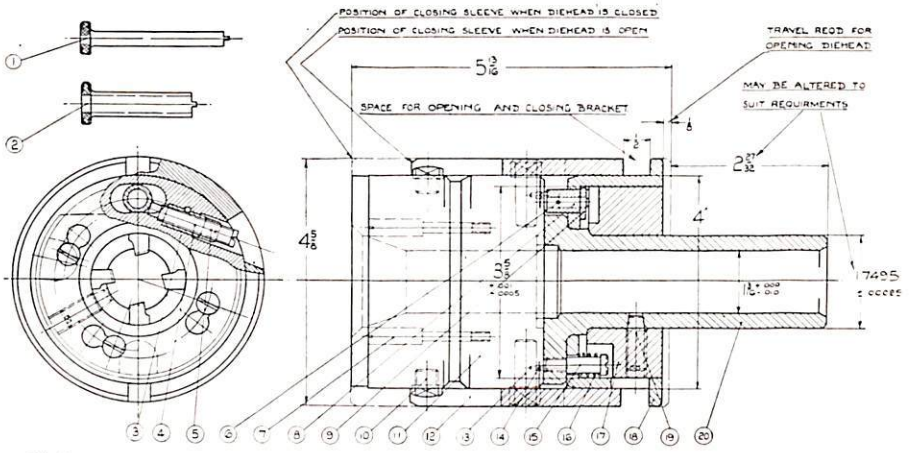
1/2″ C.H. Coventry Rotating Diehead with detent pin withdrawing sleeve.

1. Adjusting screw
2. Adjusting screw lock nut.
3. External scroll.
4. Pins (external scroll).
5. Closing sleeve.
6. Pins (adjusting ring support).
7. Screws.
8. Spring screws.
9. Springs.
10. Bush screw.
11. Detent pin withdrawing sleeve.
12. Support bush.
13. Screwdriver.
14. Slot Key.
15. Adjusting screw bush.
16. Scroll locking screws.
17. Pin for detent pin collar.
18. Detent pin.
19. Detent pin collar.
20. Detent pin nut.


POSITION OF CLOSING SLEEVE WHEN D/H IS CLOSED
POSITION OF CLOSING SLEEVE WHEN D/H IS OPEN
TRAVEL REQ'D FOR OPENING DIEHEAD
SPACE FOR OPENING AND CLOSING BRACKET
FOR CORRECT POSITION OF BUSH SCREW SEE END VIEW
MAY BE ALTERED TO SUIT REQUIREMENTS

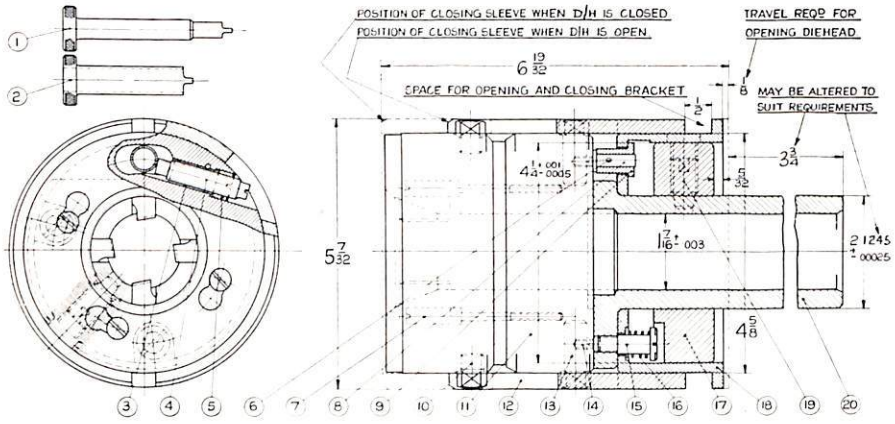
3/4″ C.H. Coventry Rotating Diehead with detent pin withdrawing sleeve.

1. Adjusting screw screwdriver.
2. Adjusting screw slot key.
3. Adjusting screw bush.
4. Adjusting screw.
5. Adjusting screw lock nut.
6. Pin for detent pin collar.
7. Screws to replace closing springs.
8. Detent pin.
9. Detent pin collar.
10. Pins (external scroll).
11. Special adjusting ring support.
12. Diehead closing sleeve
13. Pins (adjusting ring support).
14. Grub screws.
15. Spring screws.
16. Springs.
17. Support bush.
18. Detent pin withdrawing sleeve.
19. Bush screw.
20. Shank.


POSITION OF CLOSING SLEEVE WHEN DIEHEAD IS CLOSED
POSITION OF CLOSING SLEEVE WHEN DIEHEAD IS OPEN
TRAVEL REQD FOR OPENING DIEHEAD
MAY BE ALTERED TO SUIT REQUIREMENTS
SPACE FOR OPENING AND CLOSING BRACKET
5 3/16
2 27/32
4
4 5/8
3 5/8
1.7495 ± 0.0025

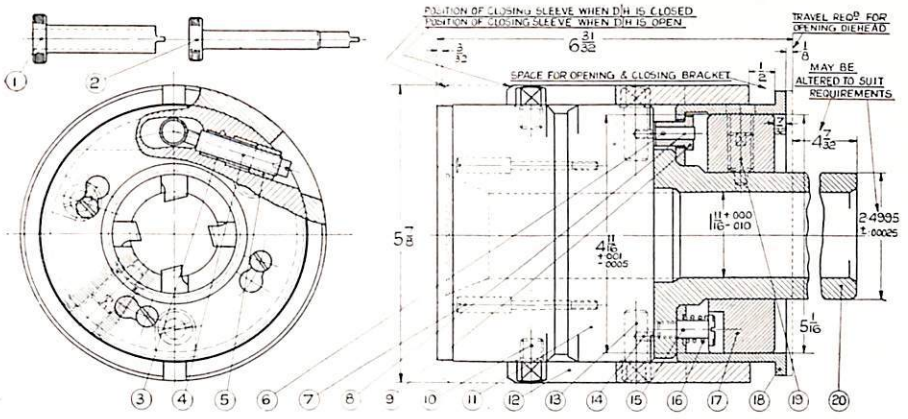
1″ C.H. Coventry Rotating Diehead with Detent Pin withdrawing sleeve.

1. Adjusting screw screwdriver.
2. Adjusting screw slot key.
3. Adjusting screw bush.
4. Adjusting screw.
5. Adjusting screw lock nut.
6. Pin for detent pin collar.
7. Screws to replace closing springs.
8. Detent pin.
9. Detent pin collar.
10. Pins (external scroll).
11. Special adjusting ring support.
12. Diehead closing sleeve
13. Pins (adjusting ring support).
14. Grub screws.
15. Spring screws.
16. Springs.
17. Support bush.
18. Detent pin withdrawing sleeve.
19. Bush screw.
20. Shank.


POSITION OF CLOSING SLEEVE WHEN D/H IS CLOSED
POSITION OF CLOSING SLEEVE WHEN D/H IS OPEN
TRAVEL REQD FOR OPENING DIEHEAD
6 19/32
SPACE FOR OPENING AND CLOSING BRACKET
MAY BE ALTERED TO SUIT REQUIREMENTS
3 3/4
5 7/32
4 5/8
2.1245 ± 0.0025

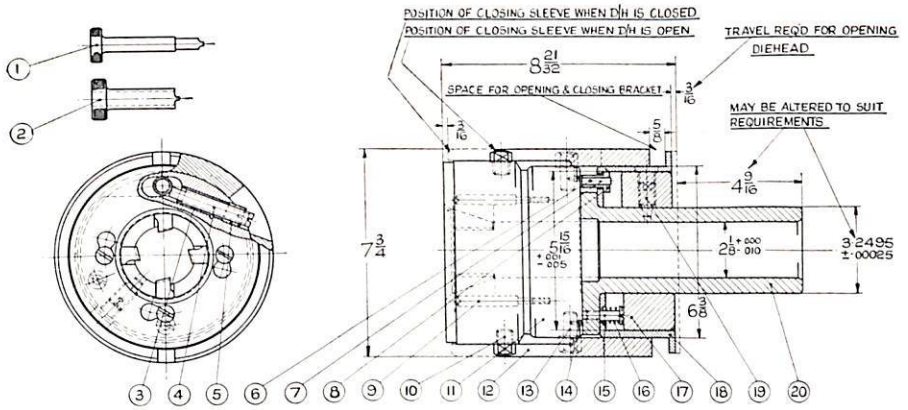
1¼″ C.H. Coventry Rotating Diehead with detent pin withdrawing sleeve.

1. Adjusting screw screwdriver.
2. Adjusting screw slot key.
3. Adjusting screw bush
4. Adjusting screw.
5. Adjusting screw lock nut.
6. Pin for detent pin collar.
7. Screws to replace closing springs.
8. Detent pin.
9. Detent pin collar.
10. Pins (external scroll).
11. Special adjusting ring support.
12. Diehead closing sleeve
13. Pins (adusting ring support).
14. Grub screws.
15. Spring screws.
16. Springs.
17. Support bush.
18. Detent pin withdrawing sleeve.
19. Bush screw.
20. Shank.


POSITION OF CLOSING SLEEVE WHEN D/H IS CLOSED
POSITION OF CLOSING SLEEVE WHEN D/H IS OPEN
TRAVEL REQD FOR OPENING DIEHEAD
SPACE FOR OPENING & CLOSING BRACKET
MAY BE ALTERED TO SUIT REQUIREMENTS
6 31/32
2 1/8
4 7/32
5 1/8
4 11/16 +.001 -.0005
1 11/16 +.000 -.010
2.4995 ±.00025
5 1/16
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20

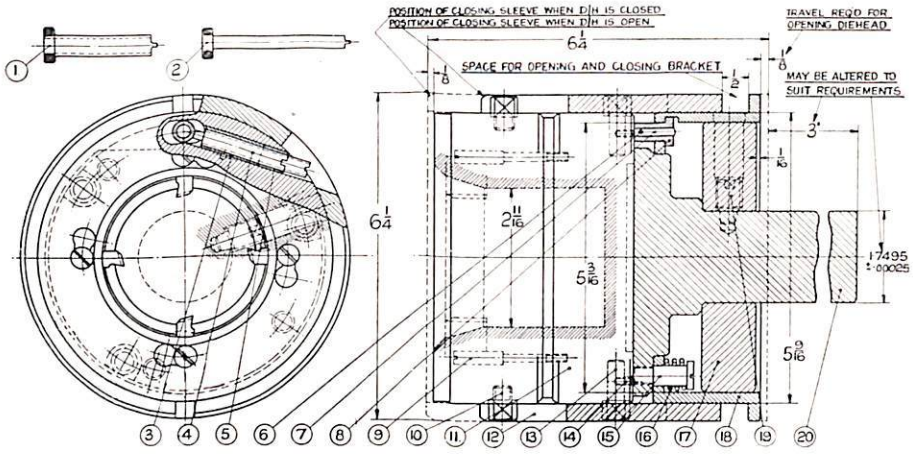
1½″ C.H. Coventry Rotating Diehead with Detent pin withdrawing sleeve.

1. Adjusting screw slot key.
2. Adjusting screw screwdriver.
3. Adjusting screw bush.
4. Adjusting screw.
5. Adjusting screw lock nut.
6. Pin for detent pin collar.
7. Screws to replace closing springs.
8. Detent pin.
9. Detent pin collar.
10. Pins (external scroll).
11. Special adjusting ring support.
12. Diehead closing sleeve
13. Pins (adjusting ring support).
14. Grub screws.
15. Spring screws.
16. Springs.
17. Support bush.
18. Detent pin withdrawing sleeve.
19. Bush screw.
20. Shank.


POSITION OF CLOSING SLEEVE WHEN D/H IS CLOSED
POSITION OF CLOSING SLEEVE WHEN D/H IS OPEN
TRAVEL REQD FOR OPENING DIEHEAD
8 21/32
SPACE FOR OPENING & CLOSING BRACKET
3/16
MAY BE ALTERED TO SUIT REQUIREMENTS
4 9/16
7 3/4
2 1/8 +.000 -.010
3.2495 ±.00025
6 3/8
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20

2″ C.H. Coventry Rotating Diehead with detent pin withdrawing sleeve.

1. Adjusting screw screwdriver.
2. Adjusting screw slot key.
3. Adjusting screw bush.
4. Adjusting screw.
5. Adjusting screw lock nut.
6. Pin for detent pin collar.
7. Detent pin.
8. Detent pin collar.
9. Screws to replace closing springs.
10. Pins (external scroll).
11. Special adjusting ring support.
12. Diehead closing sleeve
13. Pins (adjusting ring support).
14. Grub screws.
15. Spring screws.
16. Springs.
17. Support bush.
18. Detent pin withdrawing sleeve.
19. Bush screw.
20. Shank.


POSITION OF CLOSING SLEEVE WHEN D/H IS CLOSED
POSITION OF CLOSING SLEEVE WHEN D/H IS OPEN
TRAVEL REQD FOR OPENING DIEHEAD
SPACE FOR OPENING AND CLOSING BRACKET
MAY BE ALTERED TO SUIT REQUIREMENTS
6 1/4
1/8
1/2
3"
1/16
2 11/16
5 3/16
.7495 +.00025
5 3/16
1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20

2½″ F.T. Coventry Rotating Diehead with detent pin withdrawing sleeve.

1. Adjusting screw slot key.
2. Adjusting screw screwdriver.
3. Adjusting screw bush.
4. Adjusting screw.
5. Adjusting screw lock nut.
6. Pin for detent pin collar.
7. Detent pin.
8. Detent pin collar.
9. Screws to replace closing springs.
10. Pins (external scroll).
11. Adjusting ring support.
12. Diehead closing sleeve
13. Pins (adjusting ring support.)
14. Grub screws.
15. Spring screws.
16. Springs.
17. Support bush.
18. Detent pin withdrawing sleeve.
19. Bush screw.
20. Shank.

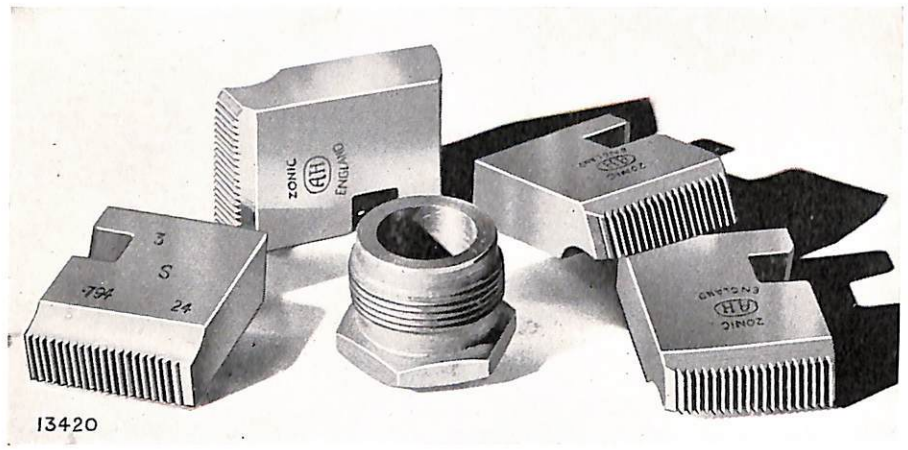
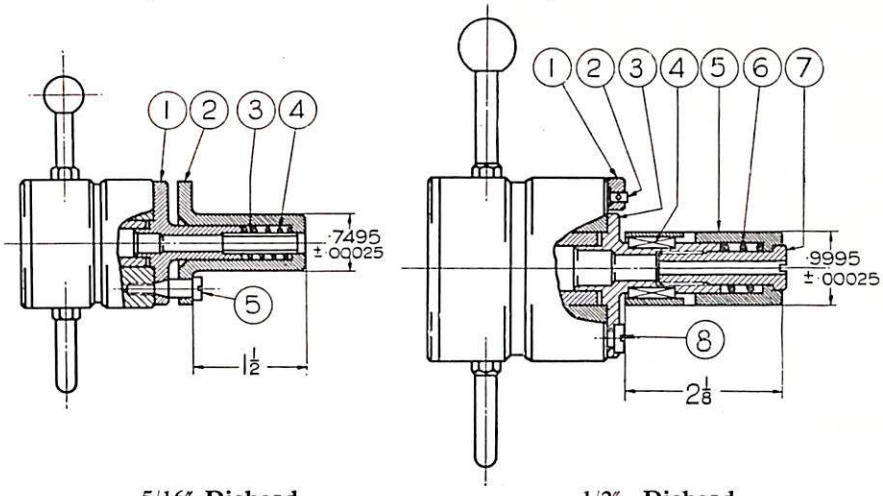


Fig. 66—A set of Zonic lapped dies threaded, to "F" limits, 347500 of these sparking plug gland nuts before being discarded.

SPARE PARTS FOR SPRING HOLDERS FOR 5/16″ AND 1/2″ COVENTRY DIEHEADS, STYLE C.H.



5/16″ Diehead.

Part No.	Name of Part
1	Shank
2	Sleeve
3	Spring Enclosing Tube
4	Spring
5	Shank Screws

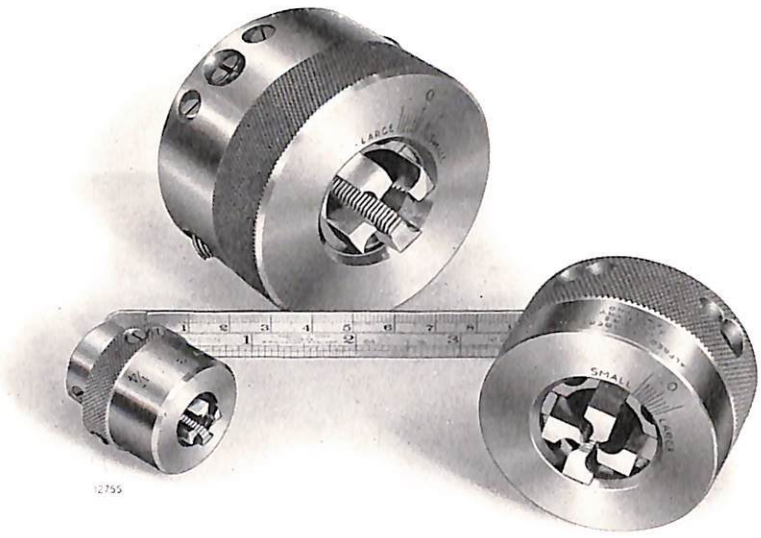
1/2″ Diehead.

Part No.	Name of Part
1	Collar
2	Detent Pin
3	Shank
4	Keys
5	Sleeve
6	Spring
7	Spring Screw
8	Shank Screws

LIST OF SPRING HOLDERS FITTED TO COVENTRY DIEHEADS

Size of Diehead	Style of Diehead	Dia. of Shank	Length of Shank	Machine on which used
¼″	C.H.	⅝″	1½″	⅜″ B.S.A. Auto B & S Type
5/16″	C.H.	⅝″	1½″	⅜″ B.S.A. Auto B & S Type
5/16″	C.H.	¾″	1½″	⅝″—¾″ B.S.A. Auto B & S Type
½″	C.H.	¾″	1½″	⅝″—¾″ B.S.A. Auto B & S Type
½″	C.H.	1″	1⅞″	1″—1½″ B.S.A. Auto B & S Type
*¾″	C.H.	1″	1⅞″	1″—1½″ B.S.A. Auto B & S Type
¼″	C.H.	⅝″	1½″	No. 00 B & S Auto
5/16″	C.H.	⅝″	1½″	No. 00 B & S Auto
5/16″	C.H.	¾″	1½″	Nos. 0 & 0G B & S Autos
½″	C.H.	¾″	1½″	Nos. 0 & 0G B & S Autos
½″	C.H.	1″	2 1/16″	Nos. 2 & 2G B & S Autos
5/16″	C.H.	⅞″	4″	⅜″ Cleveland Auto
5/16″	C.H.	1 1/16″	4″	⅝″ Cleveland Auto
½″	C.H.	1 1/16″	4″	⅝″ & ⅞″ Cleveland Autos
½″	C.H.	1¼″	5⅝″	⅞″ & 1¼″ Cleveland Autos
¾″	C.H.	1¼″	3 13/16″	⅝″ & 1¼″ Cleveland Autos
1″	C.H.	1¼″	3 13/16″	⅞″ & 1¼″ Cleveland Autos
1″	C.H.	1½″	5″	2″ & 2½″ Cleveland Autos
1″	C.H.	1¾″	5″	2¼″ Cleveland Auto
1¼″	C.H.	1½″	5″	2″ Cleveland Auto
1¼″	C.H.	1¾″	4½″	2¼″ Cleveland Auto
1½″	C.H.	2¼″	6⅜″	3¼″ Cleveland Auto
5/16″	C.H.	¾″	1½″	No. 12 "Index" Auto
5/16″	C.H.	¾″	1½″	No. 18 "Index" Auto
½″	C.H.	1″	2″	No. 24 "Index" Auto
½″	C.H.	1″	2″	No. 36 "Index" Auto
½″	C.H.	22 mm.	2″	No. 24 "Index" Auto

*Special closing arrangement required made by the B.S.A. Co., Ltd.



HERBERT PATENT SOLID ADJUSTABLE DIEHEADS

These dieheads are designed for use on small high-speed automatic screw machines which have reverse to the spindle, also drilling machines.

The cutting action of the dies is similar to that used in the Coventry Diehead. The cutting edge at the front is followed by a non-cutting edge which acts as a hardened guide and maintains correct pitch. (See Fig. 3, page 3).

The projecting dies, which enable threads to be cut close to a shoulder, are accurately fitted in the diehead body and rigidly clamped in position by means of the outer sleeve and three or four screws.

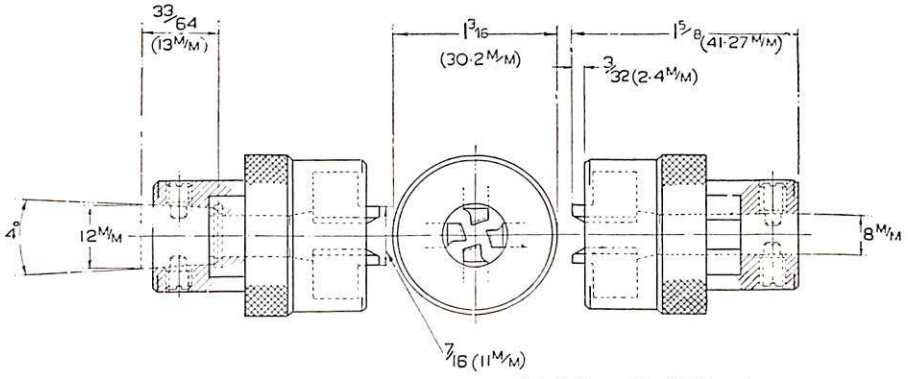


Fig. 67—Dimensions of ¼" Patent Solid Adjustable Diehead.

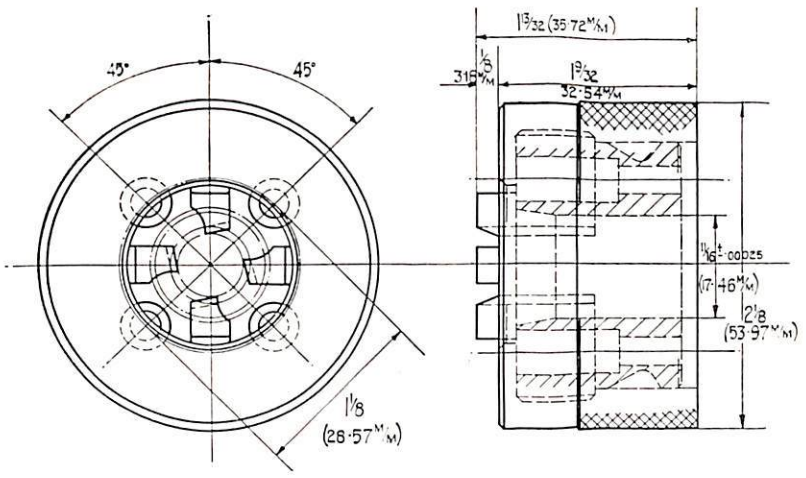


Fig. 68—Dimensions of ½″ Patent Solid Adjustable Diehead.

Provision is made for fine adjustment of the dies either above or below the nominal size by means of two screws in the periphery of the outer sleeve which also has a scroll face ground internally at the back of each die. In the ¼″ diehead, the screws register against a peg in the diehead body and the graduations are at the back. In the larger sizes the two screws act on a flat milled on the body and the graduations are at the front of the head.

Shanks or adaptors to suit the ½″ and larger sizes can be supplied to suit customers individual requirements at extra cost.

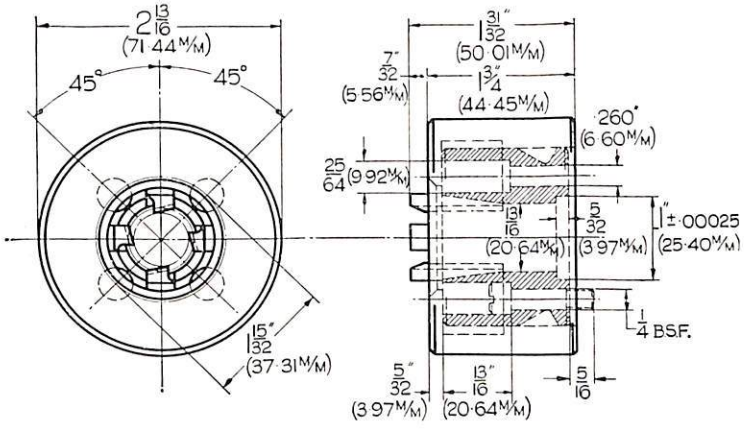


Fig. 69—Dimensions of ¾″ Patent Solid Adjustable Diehead.

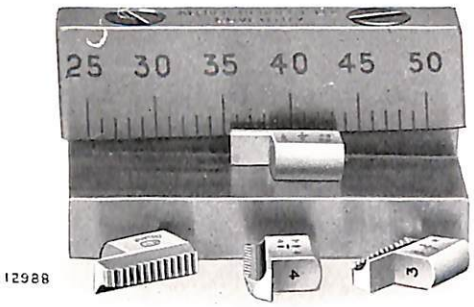


Fig. 70—Height Gauge for testing height of cutting face of dies.

The dies cannot be ground successfully by hand but should always be done in the fixtures provided. The method of grinding is fully explained on pages 41 to 49.

The dieheads are stocked in three sizes $\frac{1}{4}''$, $\frac{1}{2}''$ and $\frac{3}{4}''$ but other sizes up to $1\frac{1}{2}''$ can be supplied to special order.

The main dimensions of the three sizes are shown on pages 76 and 77.

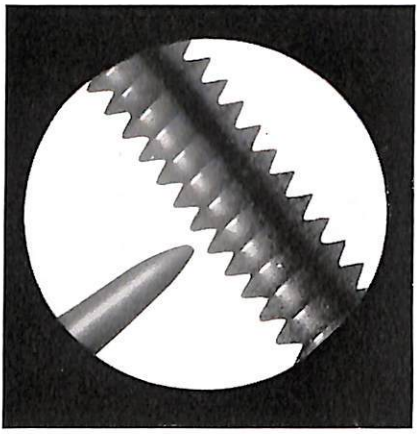
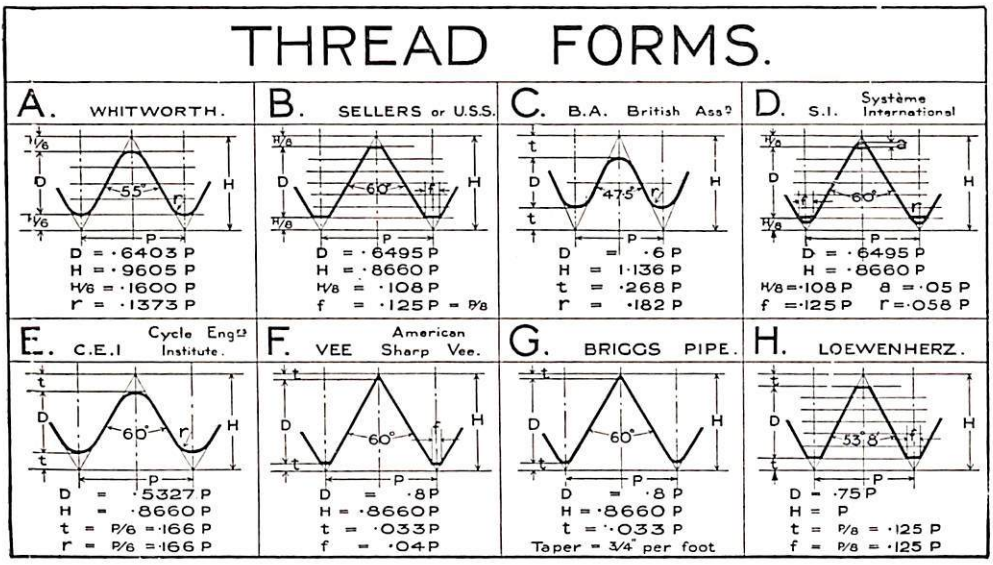


Fig. 71—1 mm. Systéme International Thread cut with a Coventry Diehead. Magnified 15 times and compared with the point of an ordinary household pin. Pitch—.25 mm. The hob for cutting the dies, after hardening, was correct in pitch to within .0127 mm. per inch.


THREAD FORMS.
A. WHITWORTH.
D = ·6403 P
H = ·9605 P
H/6 = ·1600 P
r = ·1373 P
B. SELLERS or U.S.S.
D = ·6495 P
H = ·8660 P
H/8 = ·108 P
f = ·125 P = P/8
C. B.A. British Ass?
D = ·6 P
H = 1·136 P
t = ·268 P
r = ·182 P
D. S.I. Système International
D = ·6495 P
H = ·8660 P
H/8 = ·108 P a = ·05 P
f = ·125 P r = ·058 P
E. C.E.I Cycle Eng?? Institute.
D = ·5327 P
H = ·8660 P
t = P/6 = ·166 P
r = P/6 = ·166 P
F. VEE American Sharp Vee.
D = ·8 P
H = ·8660 P
t = ·033 P
f = ·04 P
G. BRIGGS PIPE.
D = ·8 P
H = ·8660 P
t = ·033 P
Taper = 3/4" per foot
H. LOEWENHERZ.
D = ·75 P
H = P
t = P/8 = ·125 P
f = P/8 = ·125 P

COMPARISON TABLE
of British, American and Continental Standards for Screw Threads.

NOTES.

Column 1. The pitches given in this column for diameters below $\frac{1}{4}$" are the old Whitworth standard, and are not specified in the B.S. Specification for British Standard Whitworth Threads. The particulars are given here because many of these small sizes are still in use.

Columns 7 to 12. These give the old standards of American Threads which are still in use. Columns 13 and 14 give the new standards, American National Coarse (N.C.) and American National Fine (N.F.)

Columns 10 and 15. These two columns give the numbers by which A.S.M.E. and B.A. threads are generally specified.

Column 24. This column gives the nominal pipe size for which the full diameter of the screw is given in column *b*.

Column 25. The pitches for Class II, B.S.P. parallel threads are given opposite the actual full diameter of the screw thread. This diameter is also the gauge diameter for the Class I, B.S.P. taper threads, the pitches for which are given opposite the outside diameter of the pipe.

Columns 17 and 19. The Swiss Standard system follows the Systeme International very closely over 6 mm. diameter up to 80 mm. diameter.

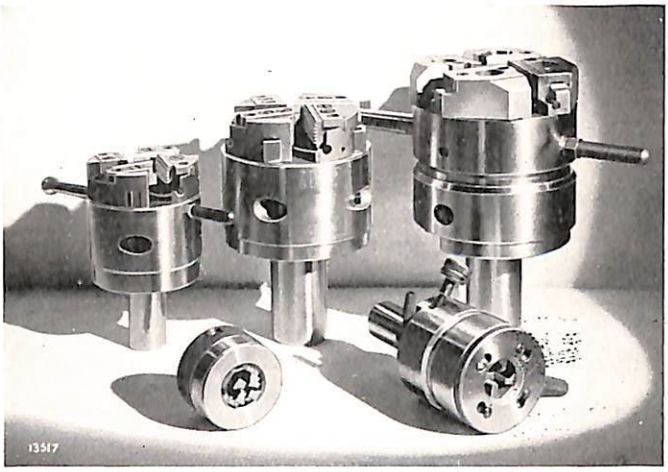
a	b	c	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
Screw Thread Systems			British Threads						American Threads								Metric Threads									Pipe Threads			
			B.S. Whit.	B.S. Fine	A.D.M. Fine	C.E.I.	Brass	Conduit	U.S.S.	S.A.E. Reg.	S.A.E. Fine	A.S.M.E. No.	A.S.M.E. Std.	A.S.M.E. Spec	N.C.	N.F.	B.A. No.	B.A.	S.I.	Metric Fine	Swiss S.T.D.	Swiss Fine	S.I. (D.I.N.)	S.I. Fine (D.I.N.)	Löwenherz	Pipe Sizes	B.S.P.	Briggs	Copper Tube
Thread Form			*a*	*a*	*a*	*e*	*a*	*a*	*b*	*b*	*b*		*b*	*b*	*b*	*b*		*c*	*d*	*d*	*d*	*d*	*f*	*f*	*h*		*a*	*g*	*a*
Thread Angle			55	55	55	60	55	55	60	60	60		60	60	60	60		47½	60	60	60	60	60	60	53°8′		55	60	55
Full Dia. of Screw			Threads per Inch						Threads per Inch								Pitch in Millimetres									Threads per In.			
Ins.	Ins.	mm.																											
	·0311	·79	…	…	…	…	…	…	…	…	…	…	…	…	…	…	16	·19											
	·0354	·90	…	…	…	…	…	…	…	…	…	…	…	…	…	…	15	·21											
	·0394	1·00	…	…	…	…	…	…	…	…	…	…	…	…	…	…	14	·23	·25	·20	·25	·12	·25	·20	·25				
	·0472	1·20	…	…	…	…	…	…	…	…	…	…	…	…	…	…	13	·25	·25	·20	·25	·12	·25	·20	·25				
	·0511	1·30	…	…	…	…	…	…	…	…	…	…	…	…	…	…	12	·28											
	·0551	1·40	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	·30	·20	·30	·12	·30	·20	·30				
17 S.W.G.	·0560	……	…	…	…	62	…	…	…	…	…	…	…	…	…	…													
	·0591	1·50	…	…	…	…	…	…	…	…	…	…	…	…	…	…	11	·31											
1/16	·0600	……	…	…	…	…	…	…	…	…	…	0	80	…	…	80													
	·0625	……	60																										
16 S.W.G.	·0640	……	…	…	…	62	…	…	…	…	…	…	…	…	…	…													
	·0669	1·70	…	…	…	…	…	…	…	…	…	…	…	…	…	…	10	·35	·35	·20	·35	·20	·35	·20	·35				
15 S.W.G.	·0720	……	…	…	…	62	…	…	…	…	…	…	…	…	…	…													
	·0730	……	…	…	…	…	…	…	…	…	…	1	72	64	64	72													
	·0748	1·90	…	…	…	…	…	…	…	…	…	…	…	…	…	…	9	·39											
5/64	·0781	……	56																										
	·0787	2·00	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	·40	·25	·40	·25	·40	·20	·40				
14 S.W.G.	·0800	……	…	…	…	62	…	…	…	…	…	…	…	…	…	…													
	·0860	……	…	…	…	…	…	…	…	…	…	2	64	56	56	64													
	·0866	2·20	…	…	…	…	…	…	…	…	…	…	…	…	…	…	8	·43											
	·0906	2·30	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	·40	·25	·40	·25	·40	·20	·40				
13 S.W.G.	·0920	……	…	…	…	56	…	…	…	…	…	…	…	…	…	…													
3/32	·0937	……	48																										
	·0984	2·50	…	…	…	…	…	…	…	…	…	…	…	…	…	…	7	·48											
	·0990	……	…	…	…	…	…	…	…	…	…	3	56	48	48	56													
	·1024	2·60	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	·45	·35	·45	·25	·45	·25	·45				
12 S.W.G.	·1040	……	…	…	…	44	…	…	…	…	…	…	…	…	…	…													
7/64	·1094	……	48																										
	·1102	2·80	…	…	…	…	…	…	…	…	…	…	…	…	…	…	6	·53											
	·1120	……	…	…	…	…	…	…	…	…	…	4	48	{40 36	40	48														
	·1181	3·00	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	·60	·35	·50	·35	·50	·35	·50				
1/8	·1250	……	40	…	…	40	26	…	…	…	…	5	44	{40 35	40	44														
	·1260	3·20	…	…	…	…	…	…	…	…	…	…	…	…	…	…	5	·59											
	·1378	3·50	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	·60	·35	·60	·35	·60	·35	·60				
	·1380	……	…	…	…	…	…	…	…	…	…	6	40	{36 32	32	40														
9/64	·1406	……	40																										
	·1417	3·60	…	…	…	…	…	…	…	…	…	…	…	…	…	…	4	·65											
	·1510	……	…	…	…	…	…	…	…	…	…	7	36	{32 30																
	·1540	……	…	…	…	40																							
5/32	·1562	……	32	…	…	32																							
	·1575	4·00	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	·75	·50	·70	·50	·70	35	·70				
	·1614	4·10	…	…	…	…	…	…	…	…	…	…	…	…	…	…	3	·73											
	·1640	……	…	…	…	…	…	…	…	…	…	8	36	{32 30	32	36														
11/64	·1719	……	32																										
	·1750	……	…	…	…	32																							
	·1770	……	…	…	…	…	…	…	…	…	…	9	32	{30 24																
	·1772	4·50	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	·75	·50	·75	·50	·75	·50	·75				
	·1850	4·70	…	…	…	…	…	…	…	…	…	…	…	…	…	…	2	·81											
3/16	·1875	……	24	32	…	32	26	…	…	…	32																		
	·1900	……	…	…	…	…	…	…	…	…	…	10	30	{32 24	24	32														
	·1969	5·00	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	·90	·50	·80	·50	·80	·50	·80				
13/64	·2031	……	24																										
	·2087	5·30	…	…	…	…	…	…	…	…	…	…	…	…	…	…	1	·9											
	·2160	……	…	…	…	…	…	…	…	…	…	12	28	24	24	28														
	·2165	5·50	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	…	·90	·50	·90	·50	·90				
7/32	·2187	……	24	28	…	26																							
a	*b*	*c*	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27

a	*b*	*c*	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
Screw Thread Systems			British Threads						American Threads								Metric Threads									Pipe Threads			
			B.S. Whit.	B.S. Fine	A.D.M. Fine	C.E.I.	Brass	Conduit	U.S.S.	S.A.E. Reg.	S.A.E. Fine	A.S.M.E. No.	A.S.M.E. Std.	A.S.M.E. Spec.	N.C.	N.F.	B.A. No.	B.A.	S.I.	Metric Fine	Swiss S.T.D.	Swiss Fine	S.I. (D.I.N.)	S.I. Fine (D.I.N.)	Löwenherz	Pipe Sizes	B.S.P.	Briggs	Copper Tube
Thread Form			*a*	*a*	*a*	*e*	*a*	*a*	*b*	*b*	*b*		*b*	*b*	*b*	*b*		*c*	*d*	*d*	*d*	*d*	*f*	*f*	*h*		*a*	*g*	*a*
Thread Angle			55	55	55	60	55	55	60	60	60		60	60	60	60		47½	60	60	60	60	60	60	53°8′		55	60	55
Full Dia. of Screw			Threads per Inch						Threads per Inch								Pitch in Millimetres									Threads per In.			
Ins.	Ins.	mm.																											
15/64	·2344	.....	24																										
	·2362	6·00	...	...	...	...	...	...	...	...	...	...	...	...	...	...	0	1·0	1·00	·75	1·00	·75	1·00	·75	1·00				
	·2420	.....	...	...	24	...	...	...	...	...	...	14	24	20															
	·2480	.....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...				
¼	·2500	.....	20	26	24	26	26	...	20	28	36	...	...	....	20	28										6M	...	...	28
	·2660	.....	...	...	...	26																							
	·2680	.....	...	...	...	...	...	...	...	...	...	16	22	20															
	·2756	7·00	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1·00	·75	1·00	·75	1·00	·75	1·10				
9/32	·2813	.....	...	26	24	26	26	...																					
	·2940	.....	...	...	...	...	...	...	...	...	...	18	20	18															
5/16	·3125	.....	18	22	24	26	26	...	18	24	32	...	...	....	18	24													
	·3150	8·00	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1·25	1·00	1·25	1·00	1·25	·75	1·20				
	·3200	.....	...	...	...	...	26	...	...	...	...	20	20	18															
	·3460	.....	...	...	...	...	...	...	...	...	...	22	18	16															
	·3543	9·00	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1·25	1·00	1·25	1·00	1·25	1·00	1·30				
	·3720	.....	...	...	...	...	...	...	...	...	...	24	16	18															
⅜	·3750	.....	16	20	24	26	26	...	16	24	32	...	...	....	16	24													
	·3830	.....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	9M	28	...	
	·3890	.....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	10M	...	...	20
	·3937	10·00	...	...	24	...	...	...	...	...	...	...	...	...	...	...	...	...	1·50	1·00	1·50	1·00	1·50	1·00	1·40				
	·3980	.....	...	...	...	...	...	...	...	...	...	26	16	14															
	·4044	.....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	11M	...	27	
	·4240	.....	...	...	...	...	...	...	...	...	...	28	14	16															
	·4331	11·00	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	....	1·50	1·00	1·50	1·00					
7/16	·4375	.....	14	18	24	26	26	...	14	20	28	...	...	....	14	20													
	·4500	.....	...	...	...	...	...	...	...	...	...	30	14	16															
	·4724	12·00	...	...	...	...	26	...	...	...	...	...	...	...	...	...	...	...	1·75	1·50	1·75	1·25	1·75	1·50	1·60				
½	·5000	.....	12	16	20	26	26	18	13	20	28	...	...	....	13	20													
	·5140	.....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	12M	...	...	20
	·5180	.....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	13M	19		
	·5343	.....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	14M	...	18	
	·5512	14·00	...	...	20	26	26	...	...	...	...	...	...	...	...	...	...	...	2·00	1·50	2·00	1·25	2·00	1·50	1·80				
9/16	·5525	.....	12	16	20	20	26	...	12	18	24	...	...	....	12	18													
	·6250	.....	11	14	20	...	26	18	11	18	24	...	...	....	11	18													
	·6299	16·00	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2·00	1·50	2·00	1·25	2·00	1·50	2·00				
	·6390	.....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	16M	...	...	20
	·6560	.....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	17M	19		
	·6714	.....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	18M	...	18	
11/16	·6875	.....	11	14	20	...	26	16	...	16	24																		
	·7087	18·00	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2·50	1·50	2·50	1·50	2·50	1·50	2·20				
¾	·7500	.....	10	12	14	...	26	16	10	16	20	...	...	....	10	16													
	·7640	.....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	20M	...	...	20
	·7874	20·00	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2·50	1·50	2·50	1·50	2·50	1·50	2·40				
13/16	·8125	.....	10	12	14	...	26	16																					
	·8150	.....	...	...	14	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	22M	14		
	·8355	.....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	24M	...	14	
	·8661	22·00	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2·50	1·50	2·50	1·50	2·50	1·50	2·80				
⅞	·8750	.....	9	11	14	...	26	16	9	14	20	...	...	....	9	14													
	·8890	.....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	27M	...	...	20
	·9020	.....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	28M	14		
15/16	·9375	.....	9	...	14	...	26																						
	·9449	24·00	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	3·00	2·00	3·00	1·50	3·00	1·50	2·80				
	·9675	.....	...	...	...	30																							
1	1·0000	25·40	8	10	12	26	26	16	8	14	20	...	...	....	8	14													
	1·0150	.....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	30M	...	...	20
	1·0236	26·00	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	3·20				
	1·0410	.....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	32M	14		
	1·0460	.....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	34M	...	14	
	1·0630	27·00	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	3·00	2·00	3·00	2·00	3·00	1·50					
	1·1024	28·00	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	3·20				
1¼	1·1250	.....	7	9	12	...	26	...	7	12	18	...	...	....	7	12													
	1·1550	.....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	1	...	...	20
	1·1811	30·00	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	3·50	2·00	3·50	2·00	3·50	1·50	3·60				
a	*b*	*c*	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27

a	*b*	*c*	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
Screw Thread Systems			British Threads						American Threads								Metric Threads									Pipe Threads			
			B.S. Whit.	B.S. Fine	A.D.M. Fine	C.E.I.	Brass	Conduit	U.S.S.	S.A.E. Reg.	S.A.E. Fine	A.S.M.E. No.	A.S.M.E. Std.	A.S.M.E. Spec	N.C.	N.F.	B.A. No.	B.A.	S.I.	Metric Fine	Swiss S.T.D.	Swiss Fine	S.I. (D.I.N.)	S.I. Fine (D.I.N.)	Löwenherz	Pipe Sizes	B.S.P.	Briggs	Copper Tube
Thread Form			*a*	*a*	*a*	*e*	*a*	*a*	*b*	*b*	*b*		*b*	*b*	*b*	*b*		*c*	*d*	*d*	*d*	*d*	*f*	*f*	*h*		*a*	*g*	*a*
Thread Angle			55	55	55	60	55	55	60	60	60		60	60	60	60		47½	60	60	60	60	60	60	53°8′		55	60	55
Full Dia. of Screw			Threads per Inch						Threads per Inch								Pitch in Millimetres									Threads per In.			
Ins.	Ins.	mm.																											
	1·1890	.....																								$\frac{7}{8}$	14		
1¼	1·2500	.....	7	9	12	...	26	16	7	12	18	...	...	.....	7	12	.....	.....	.....	.....	.....	.....	.....	.....	.....				
	1·2598	32·00	...	...	...	...	...	...	...	...	...	...	...	.....	...	...	.....	.....	.....	.....	.....	.....	.....	.....	3·60				
	1·2900	.....	...	...	...	24	...	...	...	...	...	...	...	.....	...	...	.....	.....	.....	.....	.....	.....	.....	.....	.....				
	1·2992	33·00	...	...	...	...	...	...	...	...	...	...	...	.....	...	...	.....	.....	3·50	2·00	3·50	2·00	3·50	1·50	.....				
	1·3082	.....	...	...	...	...	...	...	...	...	...	...	...	.....	...	...	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	...	1¼	
	1·3090	.....	...	...	...	...	...	...	...	...	...	...	...	.....	...	...	.....	.....	.....	.....	.....	.....	.....	.....	.....	1	11		
	1·3700	.....	...	...	...	24	...	...	...	...	...	...	...	.....	...	...	.....	.....	.....	.....	.....	.....	.....	.....	.....				
1⅜	1·3750	.....	6	8	12	24	26	16	6	12	18	...	...	.....	6	12	.....	.....	.....	.....	.....	.....	.....	.....	.....				
	1·4050	.....	...	...	...	...	...	...	...	...	...	...	...	.....	...	...	.....	.....	.....	.....	.....	.....	.....	.....	.....	1¼	.....	.....	20
	1·4173	36·00	...	...	...	...	...	...	...	...	...	...	...	.....	...	...	.....	.....	4·00	3·00	4·00	2·00	4·00	1·50	4·00				
1 7/16	1·4375	.....	...	...	12	24	26	...	...	...	...	...	...	.....	...	...	.....	.....	.....	.....	.....	.....	.....	.....	.....				
1½	1·5000	.....	6	8	12	24	26	14	6	12	18	...	...	.....	6	12	.....	.....	.....	.....	.....	.....	.....	.....	.....				
	1·5354	39·00	...	...	...	...	...	...	...	...	...	...	...	.....	...	...	.....	.....	4·00	3·00	4·00	2·00	4·00	.....	.....				
	1·5748	40·00	...	...	...	...	...	...	...	...	...	...	...	.....	...	...	.....	.....	.....	.....	.....	.....	.....	1·50	4·40				
1⅝	1·6250	.....	5	8	12	...	...	...	5½	12	16	...	...	.....	...	...	.....	.....	.....	.....	.....	.....	.....	.....	.....				
	1·6500	.....	...	...	...	...	...	...	...	...	...	...	...	.....	...	...	.....	.....	.....	.....	.....	.....	.....	.....	.....	1¼	11		
	1·6530	.....	...	...	...	...	...	...	...	...	...	...	...	.....	...	...	.....	.....	.....	.....	.....	.....	.....	.....	.....	1¼	...	11½	
	1·6536	42·00	...	...	...	...	...	...	...	...	...	...	...	.....	...	...	.....	.....	4·50	3·00	4·50	2·00	4·50	1·50	.....				
	1·6550	.....	...	...	...	...	...	...	...	...	...	...	...	.....	...	...	.....	.....	.....	.....	.....	.....	.....	.....	.....	1½	.....	.....	20
1¾	1·7500	.....	5	7	12	...	...	14	5	12	16	...	...	.....	5	...	.....	.....	.....	.....	.....	.....	.....	.....	.....				
	1·7716	45·00	...	...	...	...	...	...	...	...	...	...	...	.....	...	...	.....	.....	4·50	3·00	4·50	2·00	4·50	1·50	.....				
1⅞	1·8750	.....	4½	...	12	...	...	...	5	12	16	...	...	.....	...	...	.....	.....	.....	.....	.....	.....	.....	.....	.....				
	1·8820	.....	...	...	...	...	...	...	...	...	...	...	...	.....	...	...	.....	.....	.....	.....	.....	.....	.....	.....	.....	1½	11		
	1·8898	48·00	...	...	...	...	...	...	...	...	...	...	...	.....	...	...	.....	.....	5·00	3·00	5·00	2·00	5·00	1·50	.....				
	1·8919	.....	...	...	...	...	...	...	...	...	...	...	...	.....	...	...	.....	.....	.....	.....	.....	.....	.....	.....	.....	1¼	...	11½	
	1·9290	.....	...	...	...	...	...	...	...	...	...	...	...	.....	...	...	.....	.....	.....	.....	.....	.....	.....	.....	.....	1¾	...	...	16
	1·9685	50·00	...	...	...	...	...	...	...	...	...	...	...	.....	...	...	.....	.....	.....	.....	.....	.....	.....	1·50	.....				
2	2·0000	.....	4½	7	8	...	...	14	4½	12	16	...	...	.....	4½	...	.....	.....	.....	.....	.....	.....	.....	.....	.....				
	2·0472	52·00	...	...	...	...	...	...	...	...	...	...	...	.....	...	...	.....	.....	5·00	3·00	5·00	2·50	5·00	1·50	.....				
	2·1160	.....	...	...	...	...	...	...	...	...	...	...	...	.....	...	...	.....	.....	.....	.....	.....	.....	.....	.....	.....	1¾	11		
2⅛	2·1250	.....	4½	...	8	...	...	...	...	12	16	...	...	.....	...	...	.....	.....	.....	.....	.....	.....	.....	.....	.....				
	2·1790	.....	...	...	...	...	...	...	...	...	...	...	...	.....	...	...	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	...	...	16
	2·2047	56·00	...	...	...	...	...	...	...	...	...	...	...	.....	...	...	.....	.....	5·50	4·00	5·50	2·50	5·50	2·00	.....				
2½	2·2500	.....	4	6	8	...	...	...	4½	12	16	...	...	.....	4½	...	.....	.....	.....	.....	.....	.....	.....	.....	.....				
	2·3470	.....	...	...	...	...	...	...	...	...	...	...	...	.....	...	...	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	11		
	2·3622	60·00	...	...	...	...	...	...	...	...	...	...	...	.....	...	...	.....	.....	5·50	4·00	5·50	2·50	5·50	2·00	.....				
	2·3659	.....	...	...	...	...	...	...	...	...	...	...	...	.....	...	...	.....	.....	.....	.....	.....	.....	.....	.....	.....	2	...	11½	
2⅜	2·3750	.....	4	...	8	...	...	...	...	12	16	...	...	.....	...	...	.....	.....	.....	.....	.....	.....	.....	.....	.....				
	2·4290	.....	...	...	...	...	...	...	...	...	...	...	...	.....	...	...	.....	.....	.....	.....	.....	.....	.....	.....	.....	2½	...	...	16
2½	2·5000	.....	4	6	8	...	...	14	4	12	16	...	...	.....	4	...	.....	.....	.....	.....	.....	.....	.....	.....	.....				
	2·5197	64·00	...	...	...	...	...	...	...	...	...	...	...	.....	...	...	.....	.....	6·00	4·00	6·00	2·50	6·00	2·00	.....				
	2·5870	.....	...	...	...	...	...	...	...	...	...	...	...	.....	...	...	.....	.....	.....	.....	.....	.....	.....	.....	.....	2½	11		
2⅝	2·6250	.....	4	...	8	...	...	...	...	12	16	...	...	.....	...	...	.....	.....	.....	.....	.....	.....	.....	.....	.....				
	2·6772	68·00	...	...	...	...	...	...	...	...	...	...	...	.....	...	...	.....	.....	6·00	....	6·00	2·50	6·00	2·00	.....				
	2·6790	.....	...	...	...	...	...	...	...	...	...	...	...	.....	...	...	.....	.....	.....	.....	.....	.....	.....	.....	.....	2½	...	...	16
2¾	2·7500	.....	3½	6	8	...	...	...	4	12	16	...	...	.....	4	...	.....	.....	.....	.....	.....	.....	.....	.....	.....				
	2·8347	72·00	...	...	...	...	...	...	...	...	...	...	...	.....	...	...	.....	.....	6·00	4·00	6·00	2·50	6·00	2·00	.....				
	2·8622	.....	...	...	...	...	...	...	...	...	...	...	...	.....	...	...	.....	.....	.....	.....	.....	.....	.....	.....	.....	2½	...	8	
2⅞	2·8750	.....	3½	...	8	...	...	...	...	12	16	...	...	.....	...	...	.....	.....	.....	.....	.....	.....	.....	.....	.....				
	2·9290	.....	...	...	...	...	...	...	...	...	...	...	...	.....	...	...	.....	.....	.....	.....	.....	.....	.....	.....	.....	2¾	...	...	16
	2·9600	.....	...	...	...	...	...	...	...	...	...	...	...	.....	...	...	.....	.....	.....	.....	.....	.....	.....	.....	.....	2½	11		
	2·9921	76·00	...	...	...	...	...	...	...	...	...	...	...	.....	...	...	.....	.....	6·00	....	6·00	2·50	6·00	2·00	.....				
3	3·0000	.....	3½	5	8	...	...	...	3½	10	16	...	...	.....	4	...	.....	.....	.....	.....	.....	.....	.....	.....	.....				
3⅛	3·1250	.....	3½	...	8	...	...	...	3½	10	16	...	...	.....	4	...	.....	.....	.....	.....	.....	.....	.....	.....	.....				
	3·1496	80·00	...	...	...	...	...	...	...	...	...	...	...	.....	...	...	.....	.....	6·00	4·00	6·00	2·50	6·00	2·00	.....				
	3·2030	.....	...	...	...	...	...	...	...	...	...	...	...	.....	...	...	.....	.....	.....	.....	.....	.....	.....	.....	.....	3	...	...	16
	3·2100	.....	...	...	...	...	...	...	...	...	...	...	...	.....	...	...	.....	.....	.....	.....	.....	.....	.....	.....	.....	2¾	11		
3¼	3·2500	.....	3¼	...	8	...	...	...	3½	10	16	...	...	.....	4	...	.....	.....	.....	.....	.....	.....	.....	.....	.....				
	3·3071	84·00	...	...	...	...	...	...	...	...	...	...	...	.....	...	...	.....	.....	.....	.....	.....	.....	6·00	.....	.....				
	3·3465	85·00	...	...	...	...	...	...	...	...	...	...	...	.....	...	...	.....	.....	.....	.....	.....	.....	.....	2·00	.....				
3⅜	3·375	.....	3¼	...	8	...	...	...	...	10	16	...	...	.....	...	...	.....	.....	.....	.....	.....	.....	.....	.....	.....	3¼	...	...	16
	3·4530	.....	...	...	...	...	...	...	...	...	...	...	...	.....	...	...	.....	.....	.....	.....	.....	.....	.....	.....	.....				
a	*b*	*c*	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27

a	*b*	*c*	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27
Screw Thread Systems			British Threads						American Threads								Metric Threads									Pipe Threads			
			B.S. Whit.	B.S. Fine	A.D.M. Fine	C.E.I.	Brass	Conduit	U.S.S.	S.A.E. Reg.	S.A.E. Fine	A.S.M.E. No.	A.S.M.E. Std.	A.S.M.E. Spec.	N.C.	N.F.	B.A. No.	B.A.	S.I.	Metric Fine	Swiss S.T.D.	Swiss Fine	S.I. (D.I.N.)	S.I. Fine (D.I.N.)	Löwenherz	Pipe Sizes	B.S.P.	Briggs	Copper Tube
Thread Form			*a*	*a*	*a*	*e*	*a*	*a*	*b*	*b*	*b*		*b*	*b*	*b*	*b*		*c*	*d*	*d*	*d*	*d*	*f*	*f*	*h*		*a*	*g*	*a*
Thread Angle			55	55	55	60	55	55	60	60	60		60	60	60	60		47½	60	60	60	60	60	60	53°8′		55	60	55
Full Dia. of Screw			Threads per Inch						Threads per Inch								Pitch in Millimetres									Threads per In.			
Ins.	Ins.	mm.																											
	3·4600	.....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	3	11		
	3·4885	.....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	3	...	8	
3½	3·5000	.....	3½	...	8	...	...	...	3¼	10	16	...	...	...	4	...	...	...	...	...	...	...	...	...	...				
	3·5039	89·00	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	6·00	...	...				
	3·5433	90·00	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2·00	...				
3⅜	3·6250	.....	3½	...	8	...	...	...	...	10	16						...	...	...	...	...	...	...	...	...				
	3·7000	.....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	3¼	11		
	3·7008	94·00	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	6·00	...	...				
	3·7270	.....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	3½	...	...	16
	3·7402	95·00	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2·00	...				
3¾	3·7500	.....	3	...	8	...	...	...	3	10	16																		
3⅞	3·8750	.....	3	...	8	...	...	...	...	10	16																		
	3·8976	99·00	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	6·00	...	...				
	3·9370	100·00	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	2·00	...				
	3·9500	.....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	3¼	11		
	3·9770	.....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	3¾	...	...	16
	3·9888	.....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	3½	...	8	
4	4·0000	.....	3	...	6	...	...	...	3	10	16	...	...	...	4	...	...	...	...	...	...	...	...	...	...				
	4·0158	102·00	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	3·00	...				
	4·0945	104·00	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	6·00	...	...				
4⅛	4·125	.....	3	...	6	...	...	...	...	10	16																		
	4·1339	105·00	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	3·00	...				
	4·2000	.....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	3¾	11		
4¼	4·2500	.....	2⅞	...	6	...	...	...	...	10	16																		
	4·2510	.....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	4	...	...	16
	4·2520	108·00	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	3·00	...				
	4·2913	109·00	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	6·00	...	...				
	4·3307	110·00	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	3·00	...				
4⅜	4·375	.....	2⅞	...	6	...	...	...	...	10	16																		
	4·4094	112·00	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	3·00	...				
	4·4500	.....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	4	11		
	4·4871	.....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	4	...	8	
	4·4882	114·00	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	6·00	...	...				
4½	4·5000	.....	2⅞	...	6	...	...	...	2¾	10	16																		
	4·5276	115·00	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	3·00	...				
4⅝	4·6250	.....	2⅞	...	6	...	...	...	...	10	16																		
	4·6458	118.00	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	3·00	...				
	4·6852	119·00	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...				
	4·7244	120·00	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	3·00	...				
4¾	4·7500	.....	2¾	...	6	...	...	...	2⅝	10	16																		
	4·8032	122·00	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	3·00	...				
4⅞	4·8750	.....	2¾	...	6	...	...	...	...	10	16																		
	4·8820	124·00	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	6·00	...	...				
	4·9214	125·00	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	3·00	...				
	4·9500	.....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	4½	11		
	4·9859	.....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	4½	...	8	
5	5·0000	.....	2¾	...	6	...	...	...	2½	10	16																		
	5·0395	128·00	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	3·00	...				
	5·0785	129·00	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	6·00	...	...				
	5·1182	130·00	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	3·00	...				
5⅛	5·1250	.....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...				
	5·1969	132·00	...	...	6	...	...	...	...	10	16	...	...	...	...	...	...	...	...	...	...	...	...	3·00	...				
5¼	5·2500	.....	2⅞	...	6	...	...	...	...	10	16																		
	5·2757	134·00	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	6·00	...	...				
	5·3151	135·00	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	3·00	...				
5⅜	5·3750	.....	...	...	6	...	...	...	...	10	16																		
	5·4332	138·00	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	3·00	...				
	5·4500	.....	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	5	11		
	5·4725	139·00	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	...	6·00	...	...				
5½	5·5000	.....	2⅝	...	6	...	...	...	2⅝	10	16																		
a	*b*	*c*	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27

THE HERBERT RANGE OF DIEHEADS.



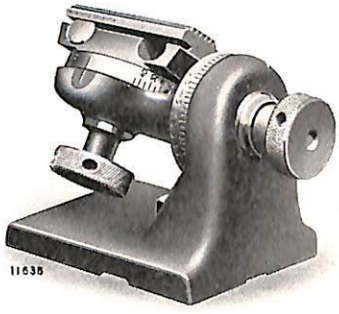
SOLID ADJUSTABLE, for use on small automatics, having reverse to the spindle, 6 sizes, $\frac{1}{4}''$—$1\frac{1}{2}''$.

COVENTRY, 12 sizes, $\frac{1}{4}''$–$4\frac{1}{2}''$ for general work.

TANGIC, for long runs and tough material, 4 sizes, $\frac{9}{16}''$, $\frac{3}{4}''$, $1\frac{1}{4}''$ and $2''$.

TANGEL, for work which can be threaded in one cut; 3 sizes, $\frac{5}{8}''$, $\frac{7}{8}''$ and $1\frac{1}{4}''$.

TANGAR, for use on rotating spindles, 3 sizes, $\frac{5}{8}''$, $\frac{7}{8}''$ and $1\frac{1}{4}''$.



Universal Grinding Fixture for all Herbert and Landis Tangential Chasers.

WE ARE SOLE AGENTS FOR ALL LANDIS DIEHEADS, COLLAPSIBLE TAPS AND THREADING MACHINES.

E5154

Edwards *The* Printers Ltd. Coventry.

COATBRIDGE TECHNICAL COLLEGE
COLLEGE LIBRARY

HERBERT, Ltd. The book of the Coventry diehead. 621.9 (4421)

This book is due for return on or before the last date shown below.

20. FEB. 1981

-6 MAR 1981

Don Gresswell Ltd., London, N.21 Cat. No. 1208 DG 02242/71